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THE CONSTITUTIONAL REQUIREMENTS FOR TROPICAL CLIMATES

AND

OBSERVATIONS ON THE SEQUEL OF DISEASE CONTRACTED IN INDIA

BY THE SAME AUTHOR.

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THE

CONSTITUTIONAL REQUIREMENTS FOR TROPICAL CLIMATES

AND

OBSERVATIONS ON THE SEQUEL OF DISEASE CONTRACTED IN INDIA

69945

BY

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PART I

THE CONSTITUTIONAL REQUIREMENTS FOR TROPICAL CLIMATES

During a prolonged service in the East, extending from 1852 to 1888, I have habitually studied the effects of a tropical climate, and of circumstances of tropical life on the European constitution. This I have done with especial reference to the following points.

1. The depressing influences of a hot climate.
2. Age.
3. Diseases already experienced, and hereditary predisposition to disease.
4. Idiosyncrasy.
5. Temperament.
6. Sex.

The subject is important, although hitherto apparently somewhat neglected. Doubtless medical men when consulted on the propriety or otherwise of anyone proceeding to a tropical climate, do take into consideration the various subjects named. But the

matter is not given the prominence it deserves in books, and by authors treating of tropical climates and diseases, especially as regards hereditary predisposition to disease, idiosyncrasy, and temperament. With reference to the latter Mr A. Stewart observes, "Our teachers of medicine, in avoiding the apparently complex study of temperament, would do well to consider their responsibility." The following observations may, therefore, in some degree tend to supply a want.

1. THE DEPRESSING INFLUENCES OF A TROPICAL CLIMATE. —Cold, damp, easterly winds, and fogs are the characteristics of our unfortunate climate. And when in these days of quick steamers a person is rapidly translated to the tropics, the change is great—much more potent than when people were carried, slowly and stately, in the sailing argosies of former generations. The European is now suddenly transported into a climate where the mean temperature is some 20° higher, where seasonal changes of temperature have attained to 103°, and where daily changes often exceed 40° and have been known to reach 80°; where there is often 30° difference between one side and the other of a window occupied by the cooling apparatus known as the "tatty;" where the sun's rays are vertical, where the rainfall is almost *nil*, or too copious and violent, and instead of being spread over the year is confined to certain seasons; where in some localities the atmosphere is so saturated with moisture that

little or no evaporation takes place from the skin; where steel and iron rust in the dryest weather, quicker than in our wettest; where in other localities and seasons the air is so dry that no moisture remains on the skin, and where confronting the hot wind is like putting one's face near a blast furnace, almost realising Hamlet's wish that "solid flesh might melt, thaw, and resolve itself into dew;" where at one period vegetation is luxuriant and rank, and at another period the earth is so dry, fissured, and burnt by heat, that no vegetation remains; where imported vegetation either dies or alters and deteriorates in character, so that it is scarcely recognisable; where animals imported from temperate zones languish, degenerate, and often die.

All in a tropical climate have certain *depressing influences* to contend against, which are escaped to a great degree in temperate zones. These depressing influences affect the European who travels speedily from a temperate climate to a much greater extent than they affect the native, especially when the European, as is so generally the case, neglects to "study well the clime, to mould its manners to his obsequious form, and mitigate the ills he cannot shun." The natives of India, particularly those whose Aryan progenitors, centuries before the Christian era, gradually invaded the Indian plains from the mountainous regions of the north, are therefore to the manner born. But

natives are not altogether exempt from the depressing influences I am about to name, one result being that the value of native life in India is considerably less than the value of life in Great Britain. The principal depressing influences to which I refer are—

A. *The heat of the climate.*

B. *The liability to chill.*

C. *Prevalence of a scorbutic taint.*

D. *Malaria.*

E. *Want of sleep.*

F. *Syphilitic taint.*

A. *The heat of the climate.*—Heat will induce disease both *directly* and *indirectly*. *Directly*, as when an immediate fever or sunstroke is the consequence of exposure to the rays of the sun; *indirectly*, as when heat syncope, or heat asphyxia, are excited by a sultry atmosphere without any direct exposure. But long continued heat acts more indirectly, for there is an optimum of heat which is most favorable to the well-being of both animals and vegetables, and which stimulates the vital functions. But if the heat rises above the optimum the reverse is the case. As a general rule, during the hot season of tropical plains, the European is not himself at all. The climate throws a net over him, and struggle as he may he must yield to its embrace. Nature seems in conspiracy to weaken the body, and to weary the brain, for a jaded mind soon attends a jaded body. Appetite fails, sleep de-

serts the couch, strength leaves the muscles, vitality is reduced, and, as a certain prelate expressed it, "one feels like a boiled cabbage." Strangers do not think the heat so oppressive at first as afterwards, which may be regarded as a proof that the constitution becomes enervated. Even in a temperate climate a season of extraordinary heat causes loss of appetite, languor, and debility by its depressant effect on the nervous system. There is, therefore, as the starting point of tropical heat degeneration, that approach to the condition with which we are familiar in temperate climes. But other influences are at work. A man expires several ounces of carbon in the twenty-four hours. But the tropical atmosphere is from heat more rarified, the result being that a given bulk of air must contain less oxygen in the tropical than in the temperate climate. And frequently owing to the small amount of cool, suitable time available, and to the lassitude produced by heat, less exercise is taken, it follows that the breathing is less accelerated by motion. It has also been proved that when a person is at rest respiration is slower in a tropical climate. Again, air expanded by heat is less elastic than cold air, and therefore less fitted to dilate the lungs and chest. Or, in other words, the pulmonary dephlogistication is slower. All this results in a diminished bulk of air being inspired, and hence necessarily a smaller proportion of oxygen. There is still another

cause of diminished supply of oxgyen. Years back Dr Forbes Watson showed that the red blood-corpuscles of Europeans in India, especially during the season of rain, moisture, and heat, become smaller, lose their smooth appearance, and are studded with refracting granules of a fatty nature; and this interferes with their function of carrying oxygen. More recently it has been demonstrated by Mentzikoff that exposure to great heat lessens the vitality of the red particles of the blood. It is probable this condition of the red particles is consequent on the diminution of oxygen as referred to above. Dr Brunton has pointed out that want of oxidation leads to the formation of fat. And probably this formation of fat takes place first in the imperfectly aerated blood. Whether this is the case or not, when the function of the red corpuscles is interfered with, a smaller supply of oxygen is the result. Although the diminution of oxygen from all causes may be slight, it is *continuous*. As said of the acorn and the oak, great events spring from slight causes. A quarter of a grain will turn the balance of a million grains. Half a degree of temperature causes the difference between the fluidity and solidity of water. An almost imperceptible degree of impurity of air will make the difference between health and disease. So a very slight diminution of inspired oxygen will lead to injurious consequences.

As a result of the various manners in which supply

of oxygen is curtailed, the carbon expired is diminished. Or otherwise stated, the higher the temperature the less the exercise, and the more the blood deterioration arising therefrom, the less the carbon exhaled. From there being less oxygen in an equal bulk of air, in comparison with temperate climates, and from lowered respiration, Dr De Chaumont calculated a diminution of 25 per cent. of exhaled carbonic acid. But this is not all. Owing to heat and the consequent increase of sensible and insensible perspiration, there is a smaller quantity of urine, while urea is increased, so that there may not be sufficient fluid to hold in solution all the effete matters which should be excreted by the kidneys and passed in the urine. The skin, debilitated by excessive action, while pouring out more water, probably eliminates no more solid matter (although this still requires investigation). The lungs, kidneys and skin being thus affected, the blood must become contaminated by effete material, in addition to the changes in the blood-corpuscles previously referred to. Blood-globules are also probably disintegrated, a destruction accelerated during attacks of malarious fever. It is known that the liver is concerned in the removal of effete blood-corpuscles. All this leads to less determination of blood towards the chest, and to accumulation of blood in the abdominal organs. Or, in other words, the pulmonary capacity and the pulmonary dephlogistication is

smaller, and abdominal, especially hepatic engorgement, is favoured. The accumulation of effete matter in the blood may be relieved by an attack of boils. Otherwise an increased strain is thrown on the intestines or the liver. If on the former, it is evidenced by diarrhœa. But, as most usually occurs, if on the liver, it is evidenced first by irregular increased hepatic dephlogistication and augmented flow of bile, which may last irregularly for some months. But after periods of profuse secretion the liver acts more irregularly, the hepatic cells become exhausted (p. 73), and there is a diminution of bile, to be still further and permanently lessened as exhaustion merges into congestion and congestion into hepatic deposit. But notwithstanding any increased action of organs, there frequently remains a substantial modification of the blood by waste material or its products. Such contamination lowers the vigour of the body generally, and renders it more ready to be affected by any disease, especially by any disease to which it may be constitutionally liable. In nervous temperaments the condition described (p. 63) as nervous exhaustion may ensue. More generally anæmia is established. As the liver always contains more blood, and its secretory cells are more active during digestion, too much eating and drinking may further stimulate the liver and add to the mischief. Hence the urgent necessity of temperate living, moderate exercise, and good general

hygienic conditions (especially) during (early) residence in the tropics.

I here observe that it is a common idea in England that the maladies of Europeans in the tropics are in the majority of cases attributable to faults on their part, such as too much eating and drinking, indolent life, &c. Doubtless a good deal of sickness is due to such causes there, as here. Still there is a great excess of sickness in the tropics which must be accounted for by something else. The reasons are to be found in the conditions of climate, and especially of the heat of the climate, which, as before observed (p. 3), affects both imported vegetation and animals.

B. *Liability to chill.*—People think that "taking cold" in a hot climate is not probable, the very reverse being the case. The heat itself, by causing excessive action of the skin, and consequently cutaneous debility, renders the skin more impressionable than in Europe to falls of temperature, and it has already been noted (p. 2) how extended and rapid these may be. Of all the vicissitudes to which the climate of India is liable, none interfere more with health than its rapid changes of temperature. Even those who attribute all diseases to microbes admit that a temporary depression caused by chill may afford germs the opportunity of development when they would have been destroyed by inherent vital power, had not chill interfered to lessen such power. It has even been asserted

that some germs are readily developed from healthy protoplasm under the influence of chill. It has been advanced that chill indicates "disturbance of protoplasmic molecular correlations," or, in chemical language, that new bodies are evolved in the protoplasm which act as veritable poisons. However this may be, chill is quite sufficient to excite disease without germs. We were formerly taught that congestions and inflammations were originated by the rush of blood to internal organs consequent on a chill driving the blood from the surface. And probably this teaching was not altogether incorrect. Others have regarded chill as acting by producing a depressant effect on the nervous system.

But whatever theory may be held with regard to chill, these facts are certain, viz. that a large number of different diseases are based on rigor, and that rigor or chill is often caused by changes of temperature. It has been remarked that various cold countries, where changes of temperature are great, are comparatively free from certain diseases which occur in the tropics, while regions supposed to enjoy more equable temperature are the homes of intense forms of such maladies, and that therefore chill cannot be influential in the excitation of these diseases. But those thus arguing do not sufficiently appreciate that excitement and consequent debility of the skin characterising residents in hot climates. A fall of a few

degrees of temperature in the tropics will make a much greater impression than a fall of many more degrees in a temperate zone, the inhabitants of which have not cutaneous surfaces debilitated by heat, and are better protected by their habits, clothing, and houses. After exposure to the intense rays of a tropical sun, or in the early morning comparatively cold, a native will wash himself and his clothing in the open air, and putting on his clothing wet, allow it to dry on his body. This washing he may do either for cleanliness, or as a religious ceremony. Neither Indians nor Europeans make sufficient change of clothing with reference to either period of the day or season. Both classes often sleep in the open air, and while unable to bear, and, indeed, not requiring anything but the slightest covering in the first part of the night, are exposed to the early morning lowering of temperature which occurs in every climate, without sufficient covering; for if they have additional protection at hand they neglect using it by sleeping on, or from carelessness. Then the houses of most natives afford poor protection against the weather, and are often overcrowded. The periodical changes of temperature to which tropical residents are subjected appear to render the system prone to maladies such as ague, of which the characteristic is periodicity. Again, many localities are spoken of and written of as equable which are not so—the Indian sea-coasts, for instance.

Even near the equator the variation between the dead calm stagnant air of the morning and the refreshing sea-breeze of midday and evening is great, and I attribute much sickness to this diurnal change of temperature being met without sufficient, often without any, precautions. A similar remark applies to the first burst of the monsoon rain, which is attended by sudden fall of temperature. But perhaps the period when chills are most likely is when, on the commencement of the cold season, while the days remain hot the nights are comparatively colder than at any other time of the year. It is at this season that so-called malarious or paroxysmal fevers especially abound.

c. *Prevalence of a scorbutic taint.*—Few even among medical men recognise the great prevalence of a scorbutic taint throughout the East, the condition being often regarded as "malarious cachexia;" for the scorbutic taint may not, and frequently does not, display itself by the spongy gums, and other indications of the confirmed disease. On the contrary it often remains hidden or *latent*. The latent scorbutic taint may be present without manifesting itself by any signs or symptoms, but even then it predisposes to, and masks, aggravates, or prevents the cure of both medical and surgical complaints. The causes of this prevalent scorbutic condition are patent. Wherever, as so frequently present in the tropics, there is a soil highly

impregnated with saline matters, there the scorbutic diathesis will prevail. For it is there that the production of vegetables is at a minimum, as very few things will grow in such a soil. But this latent scorbutic condition is sometimes present when apparently the individual has taken a sufficiency of vegetable diet. But scurvy does not invariably originate from the *same* derangement of nutrition, although that caused by lack of vegetables may be the most potent. Many other influences are in operation, which if not capable of producing scurvy (as, however, there is reason to believe they may), yet tend to render of great importance unappreciable dietetic errors, involving a minute loss of anti-scorbutic properties. There is, especially in the northern parts of India, very elevated temperature by day and cold nights, leading to overcrowding in native dwellings. Fatigue, depression, damp, so-called malaria, brackish water and absence of meat in the diet of most natives, are accessories. To a certain extent similar causes operate on Europeans, whose appetite is generally at a minimum during the hot weather, causing them to consume less meat at exactly the period when vegetables are least plentiful. Moreover, Europeans shut out both hot winds and light from their dwellings for the sake of coolness. Deficiency of solar light, whether in the arctic regions or in the tropics, is a predisposing cause of scurvy. The familiar instance of a potato sprout-

ing in the dark, throwing out blanched shoots towards the light, shows the effect of want of solar light on the vegetable world, and a similar effect is produced on the animal world. Neither should the influence of previous diseases be forgotten. Several authors have remarked on a peculiar influence of dysentery in predisposing to scurvy. A minor degree of the blood degeneration of scurvy may exist (like the poisons of syphilis or hydrophobia) for an indefinite period, without appreciable symptoms, or it may first cause, or assist in causing, what appears to be simple anæmia.

D. I now come to *malaria* as a depressing agent. There is scarcely a malady in the nomenclature of disease which malaria has not been accused of causing. But malaria is invisible, imponderable, and not recognisable by any chemical or other test, unless we admit that the *bacillus malariæ* of Cuboni, Crudelli, and Klebs is the real malarial germ. Into this question I do not propose entering, but I note that one of the most prevalent maladies attributed to malaria is *cachexia*, a condition which is not recognisable from anæmia.

E. The next depressing agency mentioned was *want of sleep*. When we bid adieu to the temperate skies of Europe, we may calculate on a falling off of this "solace to our woes." When the tropical sun sets, some mitigation of the intense heat might reasonably

be expected; yet the nights are sometimes so hot as to forbid repose. Moreover, a host of foes appear, winged insects of various kinds, ants red, white, and black, frogs, centipedes, and scorpions. The bat wheels overhead, on which it sometimes alights, and snakes patrol about. In addition, night is the season when pariah dogs not only bay but also howl the moon, when jackals yell, and when natives hold their feasts accompanied by the hideous noises known as "country music." Neither may sleep be prolonged after daylight, for the ubiquitous crow then appears at the window with his hoarse, sudden and startling croak, pigeons and sparrows do their all to add to the noise, while flies are ready to investigate every part of the person exposed. A few nights of disturbed sleep would not signify to the average robust European, but when an undisturbed night is exceptional it is different; especially if, as is often the case, this leads to sleeping in the daytime, a habit which is exceedingly detrimental to health in the tropics. The disturbed repose which Europeans so frequently experience in hot climates has a greater injurious influence on the constitution than is generally supposed.

F. The last depressant mentioned was the *syphilitic taint*, most prevalent among unmarried soldiers. The medical history sheets of European soldiers show with painful and almost unvarying regularity such entries as follows: "Admitted with primary sore

—secondaries—ague" (several times)—"diarrhœa —dysentery—hepatitis or hepatic abscess—invalided or death." Now the blood changes occurring from the syphilitic taint are more abundant white and less red blood-corpuscles, a condition allied to that which presents in anæmia. Then again, the specific remedy, mercury, has a similar effect. A considerable amount of the anæmia, of the periodical fever, and of the liver disease from which European soldiers suffer, is either purely syphilitic or greatly aggravated by syphilis. During the period I was surgeon-general, ending in 1888, I had control of the C. D. Act in Bombay. The amount of locally contracted disease was reduced to a minimum among the soldiers, and to *nil* among the sailors. Yet the C. D. Act has been repealed by the action of the British Parliament since I left India. It was bad enough when, after the passing of Mr Stanfield's Act some four years ago, stopping compulsory examination at British seaports, the number of soldiers landing in India with syphilis was alarmingly increased. Now, without the protection previously conferred by the C. D. Act in India, the British soldier must be decimated by the disease and its consequences. It is only recently reported from India that men equal in number to a whole brigade are *hors de combat* from venereal, their services being thus lost to the State.

All the depressing agencies mentioned are more or

less calculated to induce that anæmia and debility, which so many Europeans and natives suffer from in tropical climates. Anæmia is characterised by pearly conjunctivæ, pale lips, pallid complexion, chilliness, especially of the feet, languor, and diminution of both physical and mental strength. In some instances there is a disposition to the accumulation of fat, especially about the heart. It has already been mentioned (p. 6) that the effect of continued moist heat is fatty degeneration of the red particles, a condition so often evidenced by the pallid appearance of Europeans living on the moist Indian coasts; and Dr Brunton has shown that when the power of the blood to convey oxygen is lessened by the diminution of the red particles, the consequent want of oxidation leads to the formation of fat. All the symptoms of anæmia are directly attributable to thinness, poorness, and even lack of blood. Anæmia may be so slight as scarcely to attract attention. But it is often sufficiently confirmed to demand removal from a tropical climate which is generally followed by benefit. And it occasionally assumes the pernicious form, marked by vomiting, hæmorrhages, retinal affections, profuse perspirations, diarrhœa, and death. Anæmia is, however, to be regarded as a malady quite as important in its connection with and influence on other maladies. For there is no disease from which persons suffer in the tropics which is not invited by anæmia, and which

is not aggravated if present by anæmia. It is therefore evident that no anæmic person should be sent to the tropics. Anæmia should be regarded as a bar to tropical life.

2. Age.—Age is a matter of great importance. It is not desirable that very young persons should go to the tropics. Sect. 18, par. 14, of "The Queen's Regulations for the Army" lays down that no man should be sent to the tropics until he has been thoroughly drilled, also that the age should not be less than twenty; for young soldiers are apt to break down if drilled in the tropics. If over-worked they are liable to cardiac affection, and they are peculiarly disposed to enteric fever. But as a matter of fact, owing to the exigencies of the service, many men have been sent before they are twenty. According to Sir W. Aitken, there is an average of 769 lads serving in India under 19 years of age, 3182 between 20 and 21, and 5317 between 22 and 23. When Deputy Surgeon-General of the Presidency and Aden Division of the Army, I was obliged to weed out at Bombay a large number of young soldiers from a regiment sent to India in the month of September for immediate service in Affghanistan—young soldiers who were unable to bear the passage through the Red Sea at that season, and who arrived in Bombay utterly unfitted for the toils of an Affghan campaign. The late Dep. Surg.-Gen. Hewlett, C.I.E.,

in a special report on enteric fever in the army of the Bombay Presidency, recommended that soldiers should not be allowed to land in India until they have attained the age of twenty-five; and the Army Sanitary Commission gave similar advice some time back. The experience of the French in Africa may be referred to as confirmatory that only fully-developed men should be sent to tropical countries. If it could be so arranged it would certainly be well if no European went there until at least twenty-four years of age. But as this, both in military and civil life, appears for many reasons impracticable, it is merely stated that the nearer this age is approached, the better will the individual bear the climate, and probably the more care will he take of himself. It should be recollected that the liability of a man to disease in the tropics is distinctly related to his experience and intelligence.

European children in the tropics grow up weak and weedy, deficient in energy and lacking in strength. Therefore it is not desirable that the enervating influence of a tropical climate should be braved before the process of development has matured. And this does not take place till between twenty-four and twenty-five years of age, which is the period of final coalescence of the several pieces which ultimately compose a bone. The number of men who break down in the first year of tropical service depends not

only on the quality of the recruit at the time of enlistment, but to a very considerable extent on the age also.

Although some men are as young physically and mentally at sixty as others are at fifty, it is nevertheless the rule that between those ages a good deal of the elasticity of life departs. A man of fifty is far on the road towards the last act of the farce. He is not ardently hopeful, and he has probably discovered that this is a world in which merit is often overlooked. He takes interest in rheumatism, and develops awe of bronchitis. He probably shows signs of loss of power, diminished sensibility, impaired memory, muscular weakness, &c., while indications of such maladies as calculous affections, osseous deposits, atheroma, and organic visceral disease are more likely to be present. Fifty is the age fixed by regulation at which Anglo-Indians are required to vacate executive offices in the public services. In various instances the period is too early, many men being then, even in the tropics, still able to do good service, and not yet disposed to regard the future as entirely belonging to their sons. But such men represent the survival of the fittest—men who have supported the burden of the days under which so many succumb; men who, like good wine, have mellowed by age, and who therefore may be credited with more than the average *vis vitæ*, with prudence of life, with the suitable temperament, and with freedom from disease.

It will rarely happen that medical men will be consulted regarding the propriety of persons past the tenth lustrum proceeding to the tropics. This may, however, occur with reference to high State offices. In such instances, freedom from incipient visceral or cardiac disease, from tendency hereditary or otherwise to apoplexy, from disposition to congestion of the liver, and from gout should be ascertained. Then much will depend on the time of year, and more on the district in which the individual may have to reside and on the nature of the duties he may have to perform. If he is going to India in the cold season, and can reside in the hot weather on the hills, he might proceed with safety. If he has to go out in the hot season, or to remain altogether on the plains, the advice should be certainly not to venture. The capability of passing the trying season of the year in the cooler hill climates renders men, eminent in their particular line but advanced in life, able to accept office, and this capability should not be lightly interfered with; for if so, it is certain that elderly men could only accept office at such risk to health as would be practically prohibitive, and their service abroad would be lost to the State. The remark that the capability of spending the hot weather in the hills should not be lightly interfered with applies equally to permanent Indian officials, not employed in local executive duties, and who are not, therefore, obliged to be on the spot;

for the cooler hill climate is a tonic not only to the body, but also to the mind; and while disease is often prevented by the change, work is always better done in the hills.

3. DISEASES ALREADY EXPERIENCED, AND HEREDITARY TENDENCY TO DISEASE.—These subjects are entitled to grave consideration; and that peculiarity of heredity termed *atavism*, in which a morbid tendency disappears in one generation to reappear in another, should not be ignored. As with regard to feature and character, so with reference to disease and constitution. A child often resembles an ancestor in feature or character, which feature or character neither of the parents possess, and a child may become the subject of disease which affected ancestors, but from which his parents remained free—and this whether germs are implanted by ancestors, which germs may remain latent for an indefinite period, or whether inherited disposition consists only in a vulnerability to disease. As Galton observed, owing to the habit of free intermarriage, few persons can be exempt from the inheritance of a number of diseases, or of a tendency to them.

Unfortunately, many people attempt to conceal family weaknesses, and the medical man may be obliged to form a judgment not based on direct information. Among the most important hereditary maladies are—accumulation of fat, ague and so-called malarious

cachexia, albuminuria, alcolholic craving, asthma, cancer, consumption, diabetes, epilepsy, goitre, gout and rheumatism, hæmophilia, hæmorrhoids, hysteria, insanity, insomnia, liver disorders, scrofula, scurvy, syphilis. These subjects are now considered separately.

Accumulation of fat.—Both Europeans in India and natives often grow very stout, and sometimes this increase of size occurs rather suddenly. As mentioned at p. 6, anæmia may result in the accumulation of fat. When waist girth exceeds chest girth, persons are growing fat. The heavy man carries greater bulk, and his heart has to propel the blood into a larger mass of tissue. Hence one form of evil, an over-worked heart, resulting from accumulation of fat. In addition to this, fat may collect in and about the substance of the heart, giving rise to fatty degeneration. Notwithstanding the numerous remedies which have been proposed for the cure of obesity, the fact remains that the only way for fat persons to grow thin, *and to keep so*, is less food and more exercise. And it is the latter essential which cannot always be secured in the tropics, even if the will to take it exists; for only comparatively short periods of the day are cool enough and suitable for exercise. Even if the person with tendency to obesity escapes heart complication, he will be certain to suffer more from heat than others of different habit. Any decided tendency, hereditary or otherwise, to accumulation of fat

should forbid a tropical career. There is popularly associated a close connection between fat and good temper, and it may be allowed that a happy temper tends towards health in the tropics; but the over-fat amiable person is not altogether exempt from "fits of the blues." And he not unfrequently descends to the melancholy mood, for, as old Burton says, "he is the cream of human adversity, the quintessence and upshot," especially if subject to "the accursed hag—dyspepsia."

Ague and malarious cachexia.—There are several affections, which although not usually considered hereditary, may be so, among which are the conditions named above. I believe that the offspring of persons (to use a common term) "saturated with malaria," are more liable than others to so-called malarious fevers and malarious cachexia. Children of such parents are sometimes born with large spleens, and may suffer from ague while yet unborn. Neither is it necessary that both parents should have suffered from malarious disease. Cases have occurred of fœtal ague and large spleen, the father only having suffered from malarious disease. I think that the question whether an individual's parents suffered from malarious disease previous to the birth of the individual should be held in view as affording an additional make-weight in the decision on a doubtful case. No person who has suffered from ague or from enlarged spleen, or from

so-called malarious cachexia should be sent to the tropics. Persons who have so suffered are often obliged to return to the tropics. But these diseases should certainly bar a tropical career being entered upon.

Albuminuria.—Albuminuria, although usually not regarded as hereditary, should prohibit tropical residence. Albuminous urine may be a consequence of the congestion of the kidneys taking place during the cold stage of paroxysmal fevers, or during cholera, or bad forms of diarrhœa, and this congestion may terminate in alteration of renal tissue. Albuminuria may also occur as a result of chronic cachexia without the additional exciting cause of prior fever paroxysm. Thus, in the tropics there are other predisposing influences in the presence of what we are accustomed to term malarious, added to those fertile causes of albuminuria to which persons are subject in England. If the urine passed during or after a febrile paroxysm is examined, it will frequently afford albumen. When ague becomes habitual albumen is more constantly present. When anæmia, either following malarious fever or irrespective of fever paroxysms, becomes confirmed, the renal condition may be even more confidently predicted; for the condition of the blood to which the term anæmia is applied is an important factor in the production of Bright's disease. If in Europe a person has suffered from albuminuria, the

recurrence of the renal affection under the tropical influences termed malarious is most probable; and this whether, as has been recently advanced, the passage of albumen causes kidney degeneration, or the reverse. I mention this with emphasis, because it is opposed to the ideas entertained, or at least entertained some years back. The question whether a person, once the subject of albuminuria, should or should not proceed to India has, I have reason to know, been answered in the affirmative. Experience has convinced me that tropical countries should be prohibited to all who have passed albumen, unless an accidental occurrence depending on temporary cold or dietetic errors. If the kidneys have once been subject to the slightest degree of degeneration, the danger of confirmed albuminuria resulting from paroxysmal fever, or after cholera, or in connection with anæmia is great. The idea once prevalent in England that albuminuria is not a malady of hot climates is erroneous.

Alcoholic craving.—There is a consensus of opinion that anything above the most moderate use of alcoholic drink in any climate is injurious. In a hot climate it is doubly injurious, causing liver disorders, digestive derangements, a condition of blood favorable to various diseases, and loss of mental and moral power. No one who has ever developed a tendency to drink-craving should be passed for the tropics, where the thirst and debility caused by heat are constant incentives to drinking.

Asthma.—Confirmed asthma should at once be considered a bar to tropical life. A tendency to asthma, or even asthmatic parents or grandparents, should be considered more or less as a disqualification, although if no attack has been experienced heredity may not be regarded as a fatal bar. When, however, other disqualifying circumstances exist, an hereditary tendency to asthma may be permitted to turn the scale; for, as Chevers pointed out, "malarial asthma" should be a well-recognised complaint, the asthmatic tendency being intensified and developed by tropical climatic influences.

Cancer.—The existence of cancer in a family is not regarded as a bar to tropical life for the following reasons. Cancer is usually an affection of advanced, or at least of middle life, and is rare among Europeans in India, who, as mentioned under AGE, are considered unfit for tropical service after fifty, many leaving the tropics for various reasons long before they reach that period of life. Moreover, there is no reason to suppose that a tropical climate tends to the development of any form of cancer, even in persons predisposed by heredity. It has even been recently asserted that cancer is rare in India, especially among that section of the Hindu population not consuming animal food. Surgeon-Major Hendley has, however, shown this to be a fallacy, as indeed a visit to any large Indian hospital or an acquaintance with the diseases

prevalent in districts where as yet there are no hospitals would sufficiently demonstrate. If cancer is, according to the latest teaching, originated by a microbe which gains entrance from outside, the heat of the climate is not destructive to such microbe.

Consumption or phthisis.—It does not appear that any tendency to consumption or phthisis is developed by a tropical climate, or that phthisis is aggravated, provided the disease is in the early stage. At a later stage the extreme heat, and the sudden and great changes of temperature, together with the debility caused by prolonged heat, and perhaps an acquired latent scorbutic taint, often tend to develop phthisis with alarming rapidity. But in the very early stage of the malady the climate has seemed to maintain the disease in abeyance. Within my knowledge brothers and sisters of a phthisical family remaining at home have suffered, while those going to the tropics have remained free. But consumption is not, as supposed by some persons, a disease rarely met with among the natives of tropical countries, for it occurs frequently among all classes. Therefore a tendency to consumption in an European, while not in itself a bar, must be considered with other disqualifications, and, if added to other objections, would turn the scale.

Diabetes.—Diabetes is not generally regarded as an hereditary malady. But experience of the disease in

India tends to show that it is so. Years ago diabetes was not known as a disease specially affecting natives of tropical climates, Morehead stating that only six cases had come to his personal knowledge. There is, however, no doubt that very large numbers suffer from it now. Chevers says that amongst the upper and middle classes of Indians of Calcutta, almost every family has lost one or more of its members from diabetes. The same is the case in the Bombay Presidency. The fact is that instances are discovered now which would not have been recognised in former years, in consequence of so many more natives availing themselves of the services of qualified practitioners and the increase of the latter educated in the Indian medical schools. It would seem that the climate favours diabetes. The process of assimilation and elimination of rich and carbonaceous food is obstructed by want of oxygen, which is only obtainable by physical exercise, and which only can remove the superabundant carbon. Fat accumulates under the skin and in other parts of the system, producing stoutness as its first effect and afterwards diabetes, which may be regarded as an effort of nature to get rid of fat by turning it into sugar in the laboratory of the liver. Whether this is the correct explanation or not, the fact remains that diabetes is prevalent among indolent, obese, well-to-do natives (who, although perhaps not eating meat, consume abundance

of butter, rice, sweatmeats, and sugar), and this without any antecedent malarial fever, with which the passage of sugar has been connected as a sequel. Some of these persons pass sugar for years without showing any of the general symptoms of diabetes, so perhaps they should be regarded as affected with glycosuria, instead of true diabetes. But if any syphilitic taint exists, general symptoms of true diabetes may be soon expected. I should not have considered it necessary to caution against a diabetic person proceeding to the tropics had I not known that persons suffering from diabetes have been advised to go there, under a mistaken idea that diabetes is not a disease of hot climates.

Epilepsy.—Epilepsy, there is reason to believe, may be excited by heat in those predisposed to the malady, or it may arise in the predisposed from the blood degeneration caused by heat (p. 4), or it may occur after sunstroke in persons who have not suffered previously and who have no discoverable hereditary tendency. No person who has developed epilepsy, or who belongs to an epileptic family, should be permitted to enter the tropics. I have in recollection several instances of persons who had suffered occasional epileptic fits coming to India and being obliged to return in consequence of the almost immediate severe and frequent recurrence of the attacks.

Goitre.—A tendency to goitre should be regarded

as a bar, and especially if it is probable that the individual may proceed to a district where goitre is endemic. These localities are, in India, the mountainous districts, especially the Himalayas, the Terai, Oude, Tirhoot, and various localities in Bengal. I recollect several cases of the development of goitre by Europeans who belonged to a family in which goitre had previously presented. Although exophthalmic goitre may not be regarded as the same disease, being really a neurosis, there is similar tendency to its development, especially in a person of nervous temperament.

Gout.—Although it may be admitted that free action of the skin and plenty of sunlight are potent factors in the prevention of gout, still gout and rheumatism are often developed sooner and in a more irregular manner in those predisposed if residing in a tropical climate. There are special reasons for this, viz.: the enervating influence of tropical life, possibly too good living, sedentary office life with anxiety and mental work, the prevalence of hepatic disorder—for in gout the primary area of disordered nutrition is in the liver—the lessened action of the kidneys, with the consequent imperfect elimination of matter which should be removed by those organs (p. 7), and the prevalence of a scorbutic taint (p. 12). There is the authority of various observers, from Sydenham in 1680 to Ralfe in 1882, that there is not only a close resem-

blance between gout, rheumatism, and scurvy during the earlier stages of the disorders, but also a close pathological relationship. Thus Sydenham wrote: "When matter suited to produce gout is newly generated there appear various symptoms which occasion us to suspect the scurvy till the formation and actual appearance of the gout remove all doubt regarding the distemper." And Ralfe writes: "The premonitory symptoms of scurvy closely resemble those that generally precede an attack of gout. There are the same fugitive and erratic pains in the limbs, tenderness of the joints," &c.

As regards the pathological relationship, scurvy is attended by diminished alkalinity of the blood, owing to the withdrawal of alkaline bases supplied by vegetable food. In gout there is diminished alkalinity induced by positive addition and accumulation of acid salts in the blood. In rheumatism there is abundant development of acid, local rather than general, and excited by catarrhal influences or chill, interfering with the normal passage of acid from the system *via* the skin; and the extreme liability to chill in the tropics has been referred to at p. 9.

Moreover, the subjects of fever are often attacked, by a rheumatic tendency in which neuralgia may predominate. I therefore submit that as a consequence of the prevalence of liver affections, of indifferent renal elimination, of the prevalence of a scorbutic

taint, of liability to chill, and from the frequent occurrence of fevers there is a special tendency to the development of and to the irregularity of gout and rheumatism in hot climates.

Hæmophilia.—Of the hæmorrhagic diathesis, bleeding from the nose and gums are ordinary manifestations. But the former is often a sequence of malarious or climatic cachexia, or of syphilis: the latter is a common result of scorbutic taint. When the prevalence of climatic cachexia, of a scorbutic taint, and of syphilis is recollected, it is at once evident that the hæmorrhagic tendency is likely to be developed by tropical influences. Hæmophilia must therefore be regarded as a disqualification.

Hæmorrhoids.—Piles are a reason why a person should not go to the tropics, as the relaxation of tissue caused by continued heat, together with probably a more sedentary life, will certainly increase the malady. If the piles bleed, frequent loss of blood, although slight, will prove another potent factor in the causation of anæmia. On the other hand, bleeding piles, in some stout plethoric individuals, has seemed a protection from liver congestion. This, however, is not a sufficient reason to assent to a person with hæmorrhoids undertaking a tropical career.

Hysteria.—An hysterical woman should not go to the tropics. The heat, resulting anæmia, and the various annoyances incidental to tropical life (pp. 14, 50)

will certainly increase the tendency. Although the symptoms of cerebral anæmia usually mask those of spinal anæmia, the effect of anæmia on the spinal cord must be regarded as an auxiliary factor in the production of hysterical and neurasthenic symptoms. Moreover, as referred to under SEX, a tropical climate tends to aggravate and to excite uterine maladies, with which hysteria is so frequently associated.

Insanity.—Insanity in those with hereditary tendency is developed in the tropics in various manners. Heat alone tends to this. It often develops after sunstroke, but the blood degeneration caused by heat (p. 4) is a potent factor. The various annoyances and trials of tropical life (pp. 14, 50) enhance irritability of the nervous system. Some persons have what may be termed "the insane temperament"—a certain neurosis or diathesis easily prone to disturbance. They feel impressions in a way other people do not do, and are disposed to sudden and whimsical influences—a disposition which is aggravated by the heat, and by the brilliant moonlight of the tropical nights, when, as is well known, lunatics in the tropics are at their worst. Sir Joseph Fayrer detailing a case of melancholia, despondency, and delusions following malarial fever, remarks: "It is probable there may have been some hereditary tendency to these conditions, and it is just this which would be intensified and developed into a morbid state, with liability to periodic recur-

rence by malarial poisoning." Insanity is sometimes developed in those predisposed at an early period of residence in hot climates. During the first few months the novelty of all the surroundings tends to a state of excitement, but when the novelty has passed away *ennui* and home-sickness often ensue. The exile feels himself solitary and unfriended, and becomes unsettled, dispirited, and miserable. He cannot walk abroad when he likes, as in a temperate climate, and often either spends his days in a hot stifling office overwhelmed with work, or solitarily in a dreary bungalow with little or nothing to do. The man becomes hypochondriacal, the woman hysterical, and any tendency to insanity may be developed.

Insomnia, or habitual sleeplessness, is much against health in the tropics. The sleepless nights which Europeans suffer and the causes are referred to at pp. 14, 50. Insomnia is often hereditary. As Dr Goodhart observes, the rhythm of the brain is bad, faulty by inheritance. No kind of treatment will eradicate this. Therefore the person with such inheritance had better remain in a country where hindrances to sleep are less potent; for not to sleep in the tropics is to prepare the system for disease (p. 14).

Liver disorders.—There is often an innate defect of power hereditary in the liver in virtue of which its healthy functions are liable to be deranged by ordinary articles of diet, which would not affect other

people. A predisposition to habitual hepatic congestion, is also often hereditary. Whether this results from natural smallness of the organ or from other causes may be questioned. Many persons appear to have more liver as others have more lung than they require, and the reverse. However produced, a predisposition to habitual hepatic congestion or liability to derangement of liver function from slight causes is much against good health in the tropics.

Scrofula.—The remarks made under phthisis, p. 28, are fully applicable to scrofula.

Scurvy.—Scurvy is not generally regarded as hereditary, but I believe there is a greater predisposition to scurvy in the offspring of scorbutic persons. At p. 31 the resemblance of scurvy and gout is mentioned, and gout is certainly hereditary. Whether a vulnerability to scurvy is hereditary or not, sufficient has been said (p. 12) to show that no one who has suffered from scurvy should go to reside in the tropics.

Syphilis.—The influence of climate on primary syphilis is a factor of little importance, although quite the reverse when secondary symptoms are present. There is then an additional gravity attached to the disorder, as it is one of the most fertile predisposing causes of endemic disease which can exist. In the systems of the natives it is sufficiently depressing, but as the latter are, if well fed, better able to withstand the general adverse influences of continued heat and

of a tropical climate, there is not the same certainty, as in the case of the European, that the syphilitic individual will eventually become the subject of that worst form of anæmia consequent on a combination of the syphilitic, the so-called malarious, and probably the scorbutic taint. Syphilitic cachexia is often developed in the bracing climate of Europe, and it therefore cannot be matter of surprise that heat, malaria, scorbutic taint, and the enervation and debility almost inseparable from tropical residence should render syphilitic cachexia more easily inducible. Thus the debility from the climate, from the disease, from the remedy all combine and react in reducing the patient to that condition of weakness which renders him unable to withstand the slightest attack of abdominal disease, such as diarrhœa, dysentery, or hepatitis, and which not infrequently closes his earthly career (p. 15). No one who has developed syphilis should be allowed to proceed to the tropics. He will be comparatively liable to liver disease originating from syphilis, for there is no organ in the body so frequently the seat of syphilitic gummata as the liver. This organ has apparently a special susceptibility to syphilis, and this susceptibility is, I believe, intensified by the effect of climatic influences on the liver.

There are still some other maladies which should forbid a tropical career. Sunstroke sometimes occurs

in Europe, and anyone who has once suffered from sunstroke will be unfit for tropical life. Any liver affection, or dysentery, or bad diarrhœa, skin diseases, especially eczema and psoriasis, once suffered from should be considered a bar. Confirmed dyspepsia, especially of the atonic or nervous variety, and hypochondriasis unfit for tropical life, for these conditions are certain to increase when anæmia results from heat or from the inability often experienced of obtaining good food and cooking.

4. Idiosyncrasy.—This, which Mr Hutchinson regards as "individuality gone mad," must also be studied. The irritation which those of highly nervous temperament must suffer in tropical life is referred to at pp. 14, 50. But people whose peculiar idiosyncrasy is offended may be even worse situated. As we all know, there are people who are violently affected through any of the senses. The poet, when speaking of those who "die of a rose in aromatic pain," was not altogether depending on his license, for the odour of a rose has been known to excite at least fainting. Habit or idiosyncrasy will enable some people to consume large quantities of opium or arsenic. The smallest dose of mercury will salivate some persons, a few grains of iodide of potassium may induce coryza, assafœtida sometimes causes faintness; there are people who cannot go into a room where there is ipecacuanha or a cat without sneezing; others cannot

eat celery or shell-fish without suffering from nettle-rash. And what is of still more importance to the present argument is, there are some few who cannot take even a half-grain of quinine without suffering from catarrh or urticaria to such an extent as practically to forbid the use of this agent. As almost everyone, at some time or other of a tropical career, will require to take quinine, I think an inability to do so should be regarded as a reason why tropical life should be avoided; for although Indian practice shows that quinine is not quite the panacea which text-books would make it, it is nevertheless a most essential part of our armament.

The influence of the mind in exciting, modifying, or suspending secretions is a matter of daily experience. Vomiting may be induced by a disagreeable smell or sound; milk may be increased, suspended, or altered in character by mental emotions; a flow of tears or of saliva may be similarly excited. Action of the bowels is sometimes purely from mental emotion. Thus it attacks the child who is in fear of being breeched. Mental or nervous diarrhœa is also illustrated by men falling to the rear under the near prospect of battle. Nervous persons in the tropics often feel desire for motion on the receipt of anxiously expected home letters. I believe that one of the worst idiosyncrasies a person can take with him to the tropics is disposition to relaxed bowels from slight mental causes,

for persons so disposed are most liable to diarrhœa and cholera.

Intense fear of disease should disqualify for the tropics. Persons in the tropics who thus dread disease live the life of a modern Damocles. They see dangers everywhere, and, like Voltaire, regard the atmosphere as a mass of noxious vapours. They imagine every stitch in the side, whether left or right, a liver affection, every headache a sunstroke, and every pain in the stomach a cholera. When epidemics, as cholera, for instance, "rush as a storm o'er the astonished earth, and strew with sudden carcases the land," fear will most certainly not only render a person more liable to the disease, but also will prevent recovery. During epidemics of cholera nervous persons sometimes imagine they are attacked, a condition which has been called "choleraphobia," and which occasionally actually terminates in an illness which cannot be distinguished from cholera.

Persons "fond of physic," and always dosing themselves for imaginary complaints, are better out of the tropics. Nothing is more likely to predispose to bowel complaint, and especially to cholera, than the frequent use of patent aperient medicines. When cholera is in the vicinity the greatest caution in the use of any aperient is necessary, or looseness may be brought on which may end in cholera. Persons in tropical climates so frequently experience minor real

or ideal ailments that they are prone to take medicines, the composition of which is unknown, when medicines are not really required.

The deadly fear of snakes may be instanced as another example of peculiar idiosyncrasy. Those thus disposed had best keep away from snake-land, for it is extremely probable that during their sojourn in India they will suddenly confront a snake, a meeting which ere now has been followed by syncope, not from injury received but from fright. I have known persons sit up all night under the ungrounded fear of a snake being in their bedrooms and others pass many sleepless nights from the same cause. Want of sleep is referred to at p. 14 as a fertile predisposing cause of disease, and it must be confessed that snakes do sometimes penetrate Indian bedchambers.

There is an idiosyncrasy noted as sometimes associated with the sanguine temperament, in the shape of habitual copious and rapid evolution of heat on the surface of the body, especially about the neck and face, leading the person to seek the coolest place even in winter. It is stated that a gentleman thus troubled found the top of Arthur's seat a refreshingly cool place on a bleak winter's morning. When this peculiarity exists, the individual is not well suited for tropical life, and will in a hot climate suffer from heat to a much greater extent than others. He will perspire, and require the continual application of a hand-

kerchief to the neck and face when others of different habit are cool and comfortable. In the cold season he will want the windows open during the brief period others would prefer them shut. It is mentioned that this peculiar evolution of heat has sometimes been found concomitant with præcordial surface vascularity.

Lastly, there are persons who foolishly entertain a great contempt and dislike for natives of a tropical country,—in fact, for all people with a dark skin. They abuse the natives, call them opprobrious names, and at the same time fear lest the natives may injure them, instancing the mutiny as a sufficient reason for any amount of disbelief in the Indians. It may not be denied that there are good and bad natives, but, as a rule, the good in the native character predominates; and those not appreciating this had best not make themselves miserable in India.

5. Temperament,—In former times much more importance was attached to temperament than is now the case. It was once an article of belief that certain temperaments qualified men for particular stations in life. Melancholic persons were supposed to be best qualified for kings, ministers, and councillors; choleric men were regarded as best fitted to be generals, foreign ambassadors, orators, and conductors of business requiring energy and despatch; sanguine men were suited for a courtier's life; but those who had the misfortune to be of the phlegmatic temperament,

being supposed quite incompetent for any elevated position, were to be made labourers, and condemned to the lowest employments. Hoffman applied this doctrine of temperaments to nations, and thereby endeavoured to account for national peculiarities. Now, whatever may be thought in the present day of the wholesale deductions of Hoffman, there is, I submit, a morsel of truth in the metaphorical bushel of this author.

Mr Hutchinson, in his work, the 'Pedigree of Disease," is not disposed to place reliance on temperament, regarding the different characteristics of temperament as rather indications of race, of youth, of age, of health, and disease and its effects, of past anxiety and trouble, or of freedom from them; and Mr Hutchinson dwells on the difficulty of diagnosing temperaments in consequence of those traits of expression which have come through the wear and tear of life. Now, although the increased difficulty of diagnosing temperaments marked by such causes is undoubted, I do not think much difficulty presents in the case of young persons, in whom the characteristics of temperament are usually as strongly marked as those of youth, and may be often as readily distinguished. As Mr A. Stewart observes: "No boy, sanguine, fair, and impulsive, has ever become in manhood bilious, dark, and calculating; or lymphatic, heavy, and slow if in boyhood he was nervous, slim, and

rapid." And it is to the comparatively young that the remarks in this article principally apply, for old Europeans are rare in the tropics (p. 20). Some writers draw a distinction between temperament and constitution, but this appears unnecessary, as certain temperaments are usually associated with certain constitutions, and the reverse.

Temperaments are usually enumerated as four, viz. the sanguine, nervous, bilious, and lymphatic. Older authors added to this number by the addition of such terms as phlegmatic, choleric, melancholic, &c. For practical purposes, however, as connected with the suitability or otherwise of different persons for tropical climates, I prefer to maintain the four types as enumerated above; for the other types which have been named are really but variations from or exaggerations of these four. As these types should be kept steadily in view, it is desirable that the characteristics should be briefly given.

The *sanguine* temperament is marked by fair complexion and hair, light or blue eyes, strong muscles, small head, large chest, and often, as age advances, plethoric habit. The thoughts are rapid, the imagination vivid, and the animal courage high. But there is frequently want of depth and persistence in the character. There is a general tendency to congestive affections, and diseases develop rapidly. The *nervous* temperament is marked by dark or brown hair and

pallid skin, grey eyes, large forehead, and face tapering to a pointed chin, spare muscles, and generally thin and wiry habit. Frequently the chest is narrow and the circulation languid. The movements are often hasty, with alternations of languor, but there is much energy and great mental power. Maladies of the nervous system are common, while the organisation favours venous congestions, neuralgia, hepatic and intestinal obstructions. The *bilious* temperament, characterised by dark features and dark hair, square build, and predominance of bone and muscle, is associated with the greatest endurance and the least sensibility to external impressions. The name suggests a morbid habit or tendency in the liver. But the characteristics of this temperament are usually possessed without any extraordinary tendency to disease of the liver. The term *bilious* is a misnomer, and has arisen from the European of this temperament participating to some degree in the cutaneous deposition of carbon marking the coloured races of mankind, and so assuming a more or less dark or so-called bilious tinge—an appearance, however, which is quite different and has a different origin to the colour resulting from liver derangement. The bilious temperament is the nervous temperament without its irritability, and in some measure approaching the sanguine without its susceptibility to external impressions and impulsiveness. The *lymphatic* temperament is marked

by more or less ungainly or ill-proportioned form of body, large joints, bulky head, awkward movements, light hair, tendency to flabbiness and fat, with languor of bodily functions. The disposition is ordinarily unexcitable, and with perhaps good judgment there is little energy. There is tendency to disorders of the glandular system, to struma, and to maladies of the digestive organs and liver.

Whatever opinion may be held as to the origin of man, his surroundings of climate and food and general circumstances of life must be regarded as mainly instrumental in producing his modifications. In the orthodox view as originating from a single pair, no other conclusion can be drawn. The whole face of nature has been changed by time, though slowly and gradually, yet completely, and this in a much more wonderful manner than any variations in the human race are astonishing. It appears proved by Max Müller, from the science of language, that the progenitors of Anglo-Saxons and of Hindoos were originally living as one people in Northern Asia, or, as some assert, even in Northern Europe. When the Aryans* descended from their northern homes and divided into several streams, there is reason to believe

* Mr. Hewitt, in the 'Journal of the Royal Asiatic Society,' 1889. elaborately endeavours to show that India was invaded by: first Dravidian, and then Kolarian tribes, previous to the Aryan invasion. But this, if the fact, does not affect my argument.

their complexions were fair. The Aryan western offshoot, which afterwards became the Germanic stock, were certainly fair, or they have since become so. And we have the fact that the Eastern stream, the new-comers into the north of India, several thousand years B.C., prided themselves on their fair complexions. Their earliest poets, 3000 years ago, praised in the Rig Veda their "bright gods," who subjected the black-skinned—meaning the aborigines of India—to the Aryan white, and their Sanskrit word for colour (varna) came to mean race or caste. But although these early Aryans represented themselves as white, it was only white as contrasted with the black aborigines, for there is reason to believe the skins of these people were fair or tawny.

But the influences of climates, more especially of warm climates, impress certain peculiarities on the people inhabiting them; and while the tawny Aryans who wandered to Europe became lighter in colour, the tawny Aryans who wandered into India became darker in colour. And not only this: owing to greater assimilation of food and circumstances of life in a tropical country than obtains in a temperate zone, as their colour changed so did their temperaments and constitutions, all to a much greater extent than occurred in the European offshoot. Thus there is great similarity of temperament among all the races of India. It is notable that the inhabitants of Hindostan, whether

aboriginal, or unmixed Hindoos, or descendants of Arab or Mahomedan conquerors, do not evidence those variations of temperament characterising the Anglo-Saxon race. There is the dark complexion and skin, the dark hair and the spare habit, associated with a quick intellect and irritable disposition, alternating with indolence and apathy, yet with great powers of endurance. The system is alternately easily excited or depressed, while the functions of the skin and liver are peculiarly active, and digestion often sluggish. Whatever may have been the characteristics of the Aryans, we now find one type and one temperament more or less pervading the whole of the inhabitants of Hindostan, a temperament which may be regarded as a compound of the nervous and bilious, partaking more of the former type among the higher classes, and more approaching the latter type among the lower classes. Exceptions proverbially tend to prove a rule, and the exceptions, if they can be called such, to the conversion of the natives of India to one type fully support the argument; for variations are most distinctly perceptible in the north of India, where the climate during half the year is comparatively cold and during the whole year comparatively dry, the population presenting less and less variety as the south of India, the most hot and humid part of the country, is approached.

Now, theoretically it would seem that the European,

who in type and temperament most closely resembles the condition to which climate and mode of life have converted the natives of India, would be best fitted to encounter the adverse influences of a tropical climate; and practically this appears to be the case. I have usually noticed that the Europeans marked by the characteristics of the bilious temperament, or still better, of a bilio-sanguine temperament, have ordinarily enjoyed the best health in India. Sir Joseph Fayrer says, "Vigorous healthy persons of moderately spare frame, with sound viscera and temperate habits can withstand a great amount of heat;" and persons answering to the above description are usually of the temperaments named. But there must be no predominance of the nervous temperament, which was regarded so far back as the days of Sydenham to be the basis of hypochondriasis and hysteria. A highly sensitive and sympathetic nature is not most conducive to health and happiness when submitted to the daily or even hourly ills and irritation often inseparable from life in the tropics. It is not given to those of nervous temperament to possess the philosophical phlegm of a Socrates, who, when Xantippe wound up one of her little speeches with a bucket of water over her husband, could calmly observe, "After thunder rain generally falls." If fortunately there are no domestic causes of depression arising, as so frequently the case, from sickness and separations, there are still

manifold minor evils. The Anglo-Indian desiring quiet and peace finds crows alighting on his sun-screen with a crash and a caw; pigeons coo and quarrel in the verandahs; a pair of sparrows chirp and flutter about in search of a hole in the ceiling wherein to build a nest; squirrels are running up and down the verandah posts, making an unnecessary and irritating chirruping noise; flies, fresh from no one knows what filth, persist in investigating the ears, eyes, and nose; a mosquito, heralding its approach with a portentous humming sound, inserts its proboscis into the forehead or the little finger; and minute sand-flies irritate the eyes. Then, if a dust-storm arises, the wind howls, vision is obscured as by a London fog, sand fills the ears and the ink-pot, covers every object in the house, and even renders the food gritty. Moreover, there is the noise of various animals fond of taking up their abode in the roofs of Indian houses, on the ceiling or *chut* of which they chase one another, gambol all night, and sometimes even in the daytime. Rats again are often *habitués* of bedrooms, and frequently scamper over the sleeper. The fear of a snake in the bedroom is neither unreasonable nor always unfounded. Again, external night nuisances are as formidable as day annoyances. One of the most prominent of night nuisances is the barking of the pariah dog, "an accursed animal which always barks out of tune." The typical pariah dog-bark is three or four

loud harsh yelps, and then a stop—just long enough to allow the would-be sleeper to think the dog won't bark any more and to turn round for the twentieth time in a vain endeavour to go to sleep. Then the bark recurs, and so on till dawn. Byron would probably never have written "'Tis sweet to hear the watch-dog's honest bark" had he been kept awake all night by a pariah! The bleat of a goat—and the animal often keeps it up for hours—is scarcely a less nuisance. The native "tom-tom" or drum, or native so-called music or singing in a neighbouring street or village, contribute to make night hideous, natives, even in cities or military cantonments, being permitted much license in this respect under the pleas of religious festivals, marriages, and what not. When in camp there is probably, in addition, the growling and roaring of that perverse animal the camel, or the sounds of bullocks masticating their food. The hideous howling of the jackal is musical relief compared with the nuisance of the pariah dog, the bleating goat, or the native "tom-tom." An asthmatic Italian barrel-organ (which by-the-by has commenced to appear in Bombay), a London news-man crying "speshul hextree," an imaginary bloody murder, or a change of ministry, would be a relief. Sir E. Arnold, in his letters on 'India Revisited,' writes of the water-wheel that "creaks not unmelodiously beyond the gate," and he embellishes the picture by referring to the not

unmusical note of the village dog. Well! tastes differ. But if there are any sounds more irritating than others to the nervous temperament, it is the pariah bark and the harsh creak and clanging clapper of the irrigation well, which in the silence of night may be heard a mile way. In addition to all this, in the hot weather prickly heat adds to the misery, and during and after the rainy season one's soup and food generally are covered with insects or their wings. Lastly, there is the really often irritating conduct of native employés. But, in justice to native servants, it must be added that supposed irritating conduct very frequently arises from the European not properly understanding native manners and customs nor the language in which he essays to convey directions, or in which he receives answers. Now all these things may be thought petty annoyances, but by very perpetuity they are exceedingly trying to and rarely fail to make an impression on the nervous temperament, especially when after a time novelty wears off, and the system becomes enfeebled by the action of continued heat (p. 4). Then, like a metaphorical shirt of Nessus, the minor ills of every-day tropical life act as a continual blister over the whole moral epidermis of the nervous temperament. A French physiologist is credited with saying that if you want long life you must possess a bad heart and a good stomach. Richerand said, "The nervous temperament is not so much

a natural constitution of the body as the first stage of disease." Without endorsing these authors, it is certain that those of a nervous temperament, which is often associated with feeble digestion, tolerate badly any derangement of their habits, so frequently occurring in tropical life. They are prevented sleeping by slight causes, and they work under difficulty if subject to disturbances. Moreover, the characteristic of persons of a nervous temperament is to ignore the necessity of a fresh supply of energy to meet expenditure. They work on until bankruptcy in the shape of nervousness ensues. It may, therefore, be confidently stated that a highly nervous organisation, especially if associated with feeble digestion, is not fitted for the tropics.

The temperament which seems the next best suited for the tropics is the sanguine. This perhaps may be explained by a temporary less liability to anæmia, resulting probably from the more constant bodily movement characterising the sanguine person, causing increased respiration, and consequently the introduction of more oxygen into his lungs (p. 5), also by the high animal courage and the tendency to look on the best side of matters. But the sanguine are far more apt to suffer from head affections, and are also liable to sudden break-down. A compound of the bilious and sanguine would be better suited for the tropics than a purely sanguine temperament. The

lymphatic temperament must be regarded as unsuited from the tendency to an accumulation of fat, from the languor of bodily functions, from the want of energy, and from proneness to maladies of the digestive organs and of the liver. Mackinnon long since remarked that those of fair complexion and lax fibre are most liable to hepatic abscess.

The sickness and mortality of Europeans generally in tropical climates would be materially lessened if the question of temperament were taken into prominent consideration when deciding on fitness for the tropics—not as the main determining factor, but as one turning the balance in cases of doubt. As regards military recruits, for instance, age, height, weight and chest measurement are taken into account; it is also ascertained if there is any imperfection of the special senses; glandular or scrofulous swellings, congenital malformations, rupture, and traces of previous disease are looked for; the full development of the limbs and the ability to use them are essential. But temperament is not even mentioned in the directions for the examination of recruits. The omission is not of so much importance as regards military service in temperate climates; but when men are re-examined for the tropics temperament should decide in any case of doubt, for it must not be forgotten that, in addition to the greater liability of some temperaments to be affected by the influences

attending tropical life, different temperaments are ordinarily associated with a certain constitutional condition (which, as Dr J. Coates has pointed out may be general or local, *i. e.* affecting different organs) rendering persons more prone to certain specific diseases, especially in the tropics.

6. Sex.—The functions of menstruation, parturition, and lactation exercise in all countries a powerful influence on female health, and this influence is most marked in the tropics. Many causes combine in inducing a greater tendency to womb and ovarian disease in the European female in India. The excitement, novelty, and fatigue consequent on a journey to the tropics, perhaps before the periodic functions have been fully established, is often a first factor. Sea-sickness may also occur, the action of vomiting being sufficient in some constitutions to retard, or to hasten, or to increase the periodic flux. Then one of the first effects of a hot climate is a greater tendency to affections of the abdominal viscera, in which the womb and its appendages partake. Clarke long since observed, "Females suffer many circumstances of ill-health peculiar to the sex from mere heat of climate and relaxation of tissue." And I think there is, as a result of continued heat, a direct relaxation of tissues more decided in the female than in the male. Superadded to the causes of ill-health as above, there is often exposure during the menstrual

period and neglect of suitable clothing, the fatigue of long journeys, too tight lacing, and probably early marriage. Then there are errors of diet leading to intestinal irritation, chills, from tatties, punkahs, and thermantidotes; too violent and spasmodic exercise at the fashionable lawn-tennis or on horseback, the lassitude produced by heat and the consequent neglect of regular moderate exercise. Even if the individual escapes injury from the influences enumerated, she probably bears children too quickly, or she miscarries frequently, or she suffers from intermittent fever or from malarious *post-partum* fever. Why females should be more subject to periodic or malarious fevers after parturition has been theorised to depend on the womb being an organ subjected to regular periodical influence, and therefore "most likely to be impressed by malaria." Still more far-fetched, "to the miasmatous poison availing itself of a new inlet into the system through the raw and dilated surfaces of the passages after delivery." Whether this is correct or not, there is no doubt of the fact that the womb is especially liable to be affected by those climatic influences we speak of as malarious. The organ thus irritated and weakened, lying in the immediate neighbourhood of the large bowels, tends directly to the excitation of irritation, and other maladies peculiar to adjacent parts. On the other hand, the occurrence of diarrhœa, dysentery, or hæmorrhoids tends to aggra-

vate any womb affection present, and to induce it if absent. The greater inability of European females to nurse in a hot climate, in consequence of the debility from heat, also helps to explain the frequency of uterine affections; for sucklingpromotes the subsidence of the organ after pregnancy to a normal condition. If it is desirable, for reasons previously stated (p. 18), that males should not proceed to the tropics before the growth of the body is matured, it is doubly important that females should not so proceed until not only the growth of the body is matured, but also not until the function of menstruation is regularly and healthily performed. Moreover, those who have suffered from any decided menstrual disorder should remain in a temperate climate. The same advice applies to almost any uterine affection—to that extensive class of maladies which women term "internal complaints." For it may be stated as an axiom that uterine affections will progress from bad to worse in the tropics, the uterine malady itself rendering the individual more susceptible to climatic causes of disease. Further, not only should uterine malady debar tropical residence, but females of chlorotic, anæmic, sallow appearance should be regarded with suspicion when applicants for advice respecting their suitability for hot climates.

Although various causes of disease in hot climates have been enumerated, and the irritations incidental

to tropical life have been vividly portrayed, there is still no valid reason why health should not be long retained in the tropics; but certain conditions and requirements are essential. It cannot be too much impressed on Europeans in the tropics that the diseases incidental to the climate may be often escaped, or modified in severity, by attention to ordinary sanitary principles and to personal hygiene. The Anglo-Saxon race is perhaps above all others endowed with a resisting power against the evil effects of adverse climatic influences, and this power may be materially strengthened by the selection of suitable temperaments and constitutions, and by the avoidance of evident causes of disease. Improved habits of life, and public sanitary measures of recent years, have already increased the value of both European and native life in many parts of India. It is now required that more care should be bestowed in the selection of Europeans for tropical residence.

PART II

OBSERVATIONS ON THE SEQUEL OF DISEASE CONTRACTED IN INDIA

A SUITABLE climate being of the greatest importance for tropical invalids, this section is commenced by a few remarks on this subject.*

A consideration of localities and climates in Great Britain and on the Continent shows that, while there is abundance of choice for the invalid suffering from diseases of a northern climate, there is comparatively little choice for the person suffering from tropical maladies. Climates in Europe are spoken of as relaxing, sedative, exciting, and bracing, according as the locality presents certain characteristics of dryness, humidity, and temperature. In the tropics, and especially in India, the two great distinctions of hot and cool, and the paramount necessity of coolness, scarcely

* For full information *vide* author's 'Health Resorts for Tropical Invalids.'

admit of much attention to those more subtle variations to be considered with regard to the more, in some respects, changeable European climates. But invalids should not select a residence in Europe, and especially a winter residence, from thermometrical data only. In Europe it is necessary to consider more attentively than in the tropics whether a sheltered or an open spot is required, whether the air should be bracing or somewhat mild and relaxing; also, if exercise is desirable, whether it can be taken under suitable circumstances, for it is often necessary for invalids to have some sheltered spot for walks or drives. The nature of the soil also demands consideration, as a large rainfall would not be so great a hindrance to exercise on a chalky or gravel soil as on a clay stratum. It is usually supposed that the atmosphere of a place must be humid if there is a large rainfall, but dampness depends more on the ground stratum and on drainage than on rain. Drainage of a locality, natural and artificial, also of a house, must therefore be taken into account. Again, it should be remembered that a climate which may do harm or good is often much localised. Not only may a wrong district be chosen, but a wrong town, or the wrong part of a town, the wrong house, or even the wrong room. A locality may be unexceptionable with regard to its general character and climate, but there may be numerous positions in such locality where the benefits may be

neutralised by various causes, such as crowded parts, low damp situations, eastern or northern aspect, adjoining massive buildings, closely neighbouring hills, and imperfect ventilation.

It may be necessary to advise tropical invalids to use some kind of mineral water. But, unfortunately, many of the spas of Europe do not present those peculiarities of climate which a tropical invalid may require. It is, therefore, well to remember that many mineral waters may be purchased, while climate cannot be imported. And although it is with some truth stated that mineral waters do not prove so beneficial as when taken at their source, this should not lead to the sacrifice of climate for a minor advantage. As a rule it is incumbent on the tropical invalid to give the greatest consideration to climate, and not to go to a bad or unsuitable climate for the sake of drinking a water which may be regarded as likely to prove beneficial.

There is no doubt that most invalids would secure a better climate abroad than in the British Isles in the winter and spring months; but there is probably no more favorable climate for the Anglo-Saxon than that of England in the summer of an ordinary year. When change of climate is recommended from England, the principal object is to remove the patient from raw, damp, foggy weather; and when a better climate is sought in the winter, the one that approaches

nearest to the English summer will in the majority of instances be the best. A person who goes to many Continental "health resorts" ought to take health with him instead of seeking for health when there. Warmth, dry atmosphere, sunshine, an emerald sea, and flowers in winter (as on the Riviera) are very good things. On the other hand, probable subjection to various ills may do injury. The following are important matters to take into consideration:—the fatigue of the journey; the bustle of hotel life; the absence of homely seclusion; the difficulty of obtaining a sick dietary; the vicissitudes to which even the most favoured spots are liable, from a hot sun and a cold shade, from the evening fall of temperature, or from cold northerly winds blowing over snow mountains; perhaps mosquitos; may be indifferent house or local sanitation; separation from friends; the predilection or otherwise for Continental life; and the expense. A consideration of the above will not unfrequently lead to the often wise resolve to endure existing ills rather than to risk others. Notwithstanding a more favorable climate abroad, many tropical invalids would be better in the end from remaining at home. Going abroad is not advisable for very sick people, nor for those who dislike Continental life, nor for those unable to spend money liberally, so that everything necessary, or even desirable, may be obtained. Thus every case requires attentive consideration, with reference not

only to the malady, but also to the constitution, temperament, ideas, habits, and means of the patient.

The first phase I propose to describe is *nervous exhaustion*. This condition, which cannot perhaps be better defined by any other term, is one which I believe frequently results from the effects of long-continued heat. It is well known that exhaustion of both nerves and muscles may be brought about by excessive or long-applied stimulation. And it may also be induced by exposure to extremes of temperature, and by insufficient supply of oxygen. These are conditions to which it has been shown (pp. 2, 5) residents in tropical climates are subject. Too much mental work, especially of a monotonous character, may be a factor. General exhaustion is of course favoured by all conditions which give rise to anæmia. But the adynamia under consideration often occurs irrespective of anæmia. It is most likely to present in those of nervous temperament, especially if there is hereditary tendency; for what may be termed the neurotic habit of body is frequently transmitted. Often the origin of the condition may be traced to some mental distress or shock. The symptoms are more or less insomnia, dreaming, and waking from sleep unrefreshed; depression of spirits; loss of nerve; proneness to mental emotions from slight causes; irritability of temper; inability to concentrate the faculties, and therefore incapacity for mental work; and nervous headaches, either in

one spot, or in the front with an oppressed feeling. Persons so affected often complain of the power of the sun, which they say affects them more than it did in the tropics. The urine will probably afford alkaline phosphates, and there may be frequent desire to micturate. Other occasional symptoms are—palpitation of the heart on excitement, contracted or sluggish pupils, a dusky spot appearing before the eyes gradually expanding into a zigzag halo of light, double vision, a temporary cloud before the eyes, squinting, a dropping or tremulous motion of the upper lid, and periodical beating in the ears. The temperature is usually normal, but may be erratic; and the pulse is usually natural, but may be quick and feeble. The condition is very liable to merge into masked malarious fever (p. 103).

Or, if the following are hereditary complaints, there is some danger of hemiplegia, which, however, may be transient; of insanity, which is generally recovered from; of hysteria; and of a condition resembling locomotor ataxy, which may not become confirmed. Now, very similar symptoms to those described above often follow sunstroke. But when they follow sunstroke there will be the history of the attack, and there will be usually some more decided pain in the head, probably in one spot. The nervous exhaustion now considered occurs without antecedent sunstroke, often without anæmia or prior fever. It is a malady *per se*,

and examination will probably show that all the organs of the body are sound, although the functions may be languidly performed. The absence of hæmorrhoids, of a scurvy taint, of a specific taint, and of a gouty diathesis should be ascertained; sufficient action of the liver and bowels should also be secured, if necessary, by Carlsbad salts. Then probably the best medicine will be a mixture of arsenic and peroxide of iron. But time is required for recovery from this condition of nervous exhaustion, and a moderately bracing climate, as mentioned in the third illustration (p. 66).

The second and perhaps the most numerous type of tropical invalids are those who have been suffering from a *minor degree of anæmia* and nervous debility, induced by long-continued heat (p. 4), or arising from overwork, or from both causes combined. Unless the anæmic and nervous condition is very pronounced, Europeans thus suffering often improve so much on the voyage home that when they arrive in England they are not sufficiently unwell to render it necessary for them to apply for medical advice. If they do, presuming the organs are sound, the best advice which can be proffered is to betake themselves to the Scottish Highlands, or to the Engadine if the season suits; otherwise to Malvern, Ben Rhydding, Scarborough, or even Brighton, and to "throw physic to the dogs." If they are not satisfied, as many persons are not,

unless they carry away a prescription, small doses of *Liquor Arsenitis Potassæ* will be best; and if they want coloured and nasty medicine, some tincture of iron. It should, however, be ascertained if the liver acts well; if not, a little Carlsbad salts occasionally. Two cautions are necessary on any change of climate, especially such as to Scotland or the Engadine. One is to avoid chill, which I have elsewhere designated "the king of causes of disease," and to which the anæmic are so liable; the other is, not to overdo it. Twenty miles over precipices that endanger your life for a possible shot at a mythical bird is not the recreation for a person recovering from tropical anæmia, especially if there has been or is any cardiac complication (p. 70).

A third type of invalid is the person who from the same causes suffers from *more confirmed anæmia*, a condition characterised by general ill-health, depression of the vital powers, indisposition to exertion mental or physical, and often neuralgia, but unaccompanied by organic change of important organs. A similar line of treatment is necessary, especially as regards the administration of arsenic, but with even more care against exposure to chill and over-exertion. But while it may not be desirable to send such persons at once to the Scottish Highlands or to the Engadine, they still require cool bracing climates, such as Llandudno, Filey, Aberystwith, the higher sites of Bourne-

mouth; and inland Clifton, Harrogate, or Ben Rhydding. In the neighbourhood of London, Highgatè, Hampstead, and the higher parts of Croydon would be more suitable than South Kensington, where so many Anglo-Indians congregate. Abroad there are Marienbad, Bagnères-de-Luchon, Ems. If tonic mineral waters are thought necessary, Scarborough, Tunbridge Wells, Cheltenham, and Brighton, in England; Marienbad, Homburg, Luchon, abroad, are most indicated by the local climate and the ferruginous waters.

A fourth type is the person who is sent home with *anæmia very strongly marked.* This anæmia, which almost deserves the term "pernicious," may have followed paroxysmal fever, with probably congestion of the spleen; or it may have arisen without any very evident cause. There is gradual increasing weakness, the skin may be sallow or lemon coloured, evidently due to diminution of red corpuscles, but without recognisable affection of internal organs. The urine is generally high coloured and acid, but traces of bile are not found. As recently pointed out by Dr W. Hunter, this colour may be due to "pathological urobilin." The motions are usually natural in appearance, but there may be occasional diarrhœa. Often a confirmed anæmia is found in women who have borne children quickly, or who have had repeated miscarriages, or who have over-nursed. Anæmia, when

thus confirmed, requires very careful treatment. Iron, which is apparently required, is not often satisfactory for the existing healthy corpuscles appear to have little or no power to absorb, and are probably already overcharged with iron. Phosphorus has been tried and found wanting. Probably the best tonics are quinine, if much has not been taken before (p. 102), and arsenic. Arsenic seems to exert a rapid effect for good on the blood in anæmia, by increasing the red corpuscles; and in relation to this subject Dr Monckton Copeman's researches into the pathology of the blood in pernicious anæmia may be referred to. It was found that in the cases of patients treated for some days with arsenic, crystals of hæmoglobin could not be discovered. Benefit will also be derived from moderate daily exercise, and if weakness forbids exercise on foot, fresh air should be procured by carriage drives. Tepid salt-water bathing, and free ventilation of the living, and especially of the sleeping apartments, and good diet are essential. Whatever may be the diet, it should be as easily digestible and nutritious as possible, and with this proviso the taste of the patient may be freely consulted. It is also necessary that the diet should contain a due proportion of fresh vegetable material, as a scurvy taint may exist (p. 12). Digestion may be promoted by the use of pepsine with the food. As drink, good claret, or burgundy, or porter, or a little good port wine

may usually be given with advantage. Sometimes, when anæmia is very confirmed, the patient is unable to take food, either from want of appetite and loathing of food, or from food causing sickness or diarrhœa. In such cases a milk diet, as recommended (p. 116) for chronic diarrhœa, may be advisable. The climates desirable are those mentioned under the next type.

A fifth type is the person who has suffered from *ague or periodical fever, followed by more or less strongly marked anæmia.* There is a bloodless pallid aspect, impaired appetite and digestion, with great debility, probably high-coloured urine, and mental work is a labour too great to be undertaken; but still without organic change in any organ. The most effectual treatment is by arsenic. But return of fever should be guarded against by quinine, taken at intervals, and the best time to take quinine is for two or three days previous to the lunar changes of new and full moon. For although the moon, *per se,* has nothing to do with the re-excitation of ague, there are subtle atmospheric alterations at such periods which undoubtedly affect the person liable to so-called malarious fevers. As regards climate, although a bracing invigorating air will probably be necessary eventually, much more caution is demanded than when anæmia is not so strongly marked, or than when it has not followed ague and fever; for cold bracing air, if

applied too early, may prove injurious by re-exciting ague, or by consolidating incipient and perhaps undiscovered mischief of internal organs. For such persons a residence in the warmer suburbs of London, or at Cheltenham, or Bath, or Bournemouth is desirable; abroad, Pau, Vichy, the Riviera, especially Monte Carlo; and when the time arrives for change to a more bracing climate, avoidance of chill by suitable clothing is most important.

A sixth type of tropical invalid is the person suffering from more or less *anæmia with accompanying cardiac complication*. In some instances when anæmia is not strongly marked the heart is affected, for an irritable and enfeebled cardiac condition may be the principal manifestation of anæmia, or as some, designating the condition "malarial cardiac asthenia," prefer to state it, of "malarious influences." This irritable cardiac state may be purely functional, and due to weakness. There may be irregular intermitting pulse, sense of fluttering or palpitation, and some shortness of breath. But when anæmia has lasted some time there may also be fatty degeneration. If the process of degeneration is at all extensive, the heart's impulse will be much weakened, the sounds enfeebled, and anæmic murmurs may be heard. The cardiac murmur is usually a soft blowing sound with the first beat, and often only heard after exercise. It is generally perceived equally well over the sternum

and at the apex, which is consistent with the view that it is generated simultaneously in both auriculo-ventricular orifices. It is unattended with valvular mischief, the morbid sound usually ceasing as the patient gains health and strength. It is in anæmia with cardiac complication that œdema of the feet sometimes occurs.

Cardiac complications of anæmia may not, however, always depend on the anæmic condition. A case recently presented of anæmia complicated with some degree of cardiac hypertrophy, and inquiry elicited that this condition of heart was antecedent to the anæmia, and had evidently arisen from too great an addiction to athletic exercises. Again, the cardiac condition, especially when marked by palpitations and irregular pulse, may depend on co-existing dyspepsia; and it is well to recollect that a weak heart tends to induce some degree of congestion of the liver. In most of these cases the essentials are good food and plenty of fresh air, exercise short of fatigue, and regulated with special reference to the cardiac condition; as medicine, tonics, the best being arsenic, which strengthens a weakly acting heart and feeble circulation. It will be desirable to stop the use of tobacco. Suitable climates are those mentioned under the last type.

A seventh illustration is the person who returns with *anæmia more or less strongly marked, complicated*

with enlargement of the liver or of the spleen, or of both organs.

The enlargement of the spleen and liver which occurs in connection with anæmia is usually of the amyloid or waxy character, leading to the increase of weight and size and the inelastic feel without much alteration of form with which we are familiar. The lower border is usually rounded and generally regular, and there is little pain or tenderness, but a sense of disagreeable fulness or tension. The secretion of bile is usually lessened, and there may be constipation with pale yellow motions, alternating with pale diarrhœa. Constitutionally the symptoms are chiefly those of anæmia. Occasionally acute tenderness and pain may occur, which has been attributed to localised perihepatitis. As there is no jaundice nor ascites nor œdema of the feet for a long time, the portal obstruction cannot be great at first. When œdema occurs renal complication is probable, and if vomiting or persistent diarrhœa occurs the villi of the stomach and intestines may be the seat of lardaceous deposits. For the waxy liver of anæmia the syrup of iodide of iron in drachm doses is often the most satisfactory medicine. But the condition of the liver, or spleen, if affected, rarely improves until the general health is becoming re-established; for this liver affection, unlike most maladies of the organ, is not so much the cause of deterioration of health, as the latter is of

the hepatic condition. It is secondary to a constitutional malady, either hereditary or acquired. The absence of either a syphilitic, strumous, or scorbutic taint should be ascertained; if present, treatment directed to those conditions will be required. The general indications are pure air, exercise short of fatigue, nourishing diet, no spirits, and warm clothing. In such cases convalescence will probably be hastened by the use of mineral waters containing iodides and bromides, as at Woodhall in this country and Kreuznach abroad, the climates of which places will probably suit. The baths of Aix-la-Chapelle, Ems, and Weilbach are also recommended.

Torpor of the liver is the next (eighth) type. Functional disorders of the liver often occur as secondary to organic changes, but the torpor of the organ now under consideration occurs irrespective of change of structure. Torpor of the liver thus happening is a condition which may last a long time. The prominent symptoms are pale and scanty motions of a clay-like consistence and often offensive smell, and the urine generally deposits lithates. The patient is languid and sometimes sallow. The appetite is bad, and there is flatulence, occasionally having a rotten-egg flavour. A sense of sinking at the epigastrium may be complained of before meals, and nausea after meals or early in the morning. There is occasional headache, and giddiness may also be felt, but this is not a pro-

minent symptom. The hands and feet often feel hot and then cold; mental work previously performed with ease becomes a labour, which indeed applies to most hepatic disorders, for to secure intellectual activity healthy liver action is required. If the malady continues long there is loss of flesh, for healthy nutrition depends much on the normal state of the liver. The patient is often chilly, for the liver is a calorifying agent, and deficient action of the organ tends to reduction of body heat. Persons of nervous temperament are, I think, most prone to the hepatic torpor; and sometimes it follows emotional disturbance of any kind in the nervous temperament. But torpor of the liver is also very frequently seen in children, especially in India. Examination of the liver does not detect anything wrong. There is neither enlargement nor shrinking. There may be a complaint of a sensation of fulness in the right hypochondrium; but most frequently, if the matter is well inquired into, it will prove to be rather a sensation of hepatic void. The state of the liver appears to partake of that described (p. 110) under diarrhœa alba. But inasmuch as a certain amount of liver function is performed, and as some bile still passes, there is no diarrhœa. Torpor of the liver usually results from chill, but it may arise from other causes; it may be due to that exhaustion of the liver referred to at p. 8. When torpor occurs rather suddenly in old tropical

residents, especially if in the cold season, or following a visit to the hill climates, or to Europe, it will probably be due to chill. When the symptoms come on gradually in younger tropical residents, preceded by periods of increased secretion of bile causing temporary bilious flux, it will be probably due to exhaustion. But both causes, chill and exhaustion, may be combined. This torpor or exhaustion of the liver may eventually merge into congestion, and it is not possible to define accurately when one condition results in the other. Congestion of the liver, giving rise to a similar state of the stomach and bowels, leads to further digestive derangements, perhaps to the formation of ptomaines, which may be absorbed, or eventually to diarrhœa (p. 79).

Obviously the indication is to induce the liver to act. Warm clothing is a necessity, exercise should be taken freely, but the greatest care must be given to the avoidance of chill and over-fatigue. The diet should be very moderate, and containing a minimum of nitrogenous material. But a considerable extra amount of fluid is desirable, which may be taken in the shape of a breakfast-cupful of hot water sipped gradually twice or thrice a day. Carlsbad salts or Janos water may be used frequently, and the Liquor Hydrargyri Perchloridi will probably prove beneficial. Digestion may be aided by pepsine. In several cases good has resulted from (Oppenheimer's) Liquor

Euonymi et Pepsin Co., which combines a valuable hepatic and digestive agent. Nitro-muriatic acid is indicated if, as sometimes the case, the condition is associated with oxaluria. When the urine is scanty and depositing lithates, diuretics may be advisable. Iodine paint may be applied over the liver, or, if this creates too much irritation, a compress wet with nitro-muriatic acid solution may be worn several hours daily. Or the nitro-muriatic acid bath may be employed. Change of scene, regularity of diet, absence from mental harass, should be secured. Every means should be taken to secure healthy action of the skin and lungs. Cheltenham, Scarborough, Homburg, or Kissengen may be visited, and the waters used.

A ninth type of tropical invalid is the person with *congested liver*. A common cause of congested liver is mechanical, from obstruction to the circulation in the vena cava, heart, or lungs, and this form of congestion is not considered here. It may, however, be borne in mind that both obstruction to the passage of blood *from* the liver, and determination of blood *to* the liver, may be causes of congestion at the same time. A chronic congested liver, not due to mechanical cause, has probably come on gradually without previous fever or anæmia. Or it may have followed torpor of the liver, alternately with periods of excessive secretion of bile. Or there may be a history of

repeated so-called bilious attacks. It is known that the liver is most full of blood during digestion; and if the nature and quantity of the food necessitate repeated undue afflux of blood to the organ, there is one cause of congestion. In addition to this, as even more potent causes in the tropics, there may be sedentary habits, insufficient exercise, and too much sleep, especially in the daytime. Such habits of life tend to render the circulation in the hepatic veins sluggish by lessening the number and depth of the respirations. There may also be the cold stage of paroxysmal fevers driving the blood into interior organs; also exposure to the chills so easily taken after the heat of a tropical day. In females suppression of menstruation, especially at the change of life, may cause congested liver. The primary condition of chronic congested liver appears to be fulness, stretching, or turgescence; and this may continue, with intervals of subsidence and accession, for a lengthened period, without probably any change of structure. It is, however, as impossible to define when congestion merges into organic change as when torpor becomes congestion (p. 75), for the one is the origin and initiatory step of the other. Retardation of blood in the portal vessels is the early step in the order of change. As yet, while there is no change of structure, the liver may be full, bulky, and perhaps tender. This occurs more especially after indulgence

at the table and exposure to cold. It may be relieved by a so-called bilious attack or by purgative doses. But often this congestion of the liver is associated with an irritable condition of the stomach and intestines, not altogether caused by the state of the liver, but by the same agencies affecting the liver; and sometimes it would appear that gastro-intestinal congestion or catarrh is the cause of liver congestion. Then there are more decided dyspeptic symptoms, such as defective appetite, coated tongue, flatulence, bad taste in the mouth, pyrosis, irregular action of the bowels, frontal headache, irregular pulse, palpitations, uneasiness in the right side (especially when lying on the left), yellow tinge of the conjunctivæ, and deposits of lithates in the urine. The feet are often cold, and there is loss of flesh, the skin being harsh and dry. Chronic congestion of the liver, even when attended by gastric and intestinal irritation contracted in hot climates, is usually much benefited by change to a temperate zone. But care against chill, care in diet, and abstinence from alcoholic drinks are essential. People generally desire to know what they are to eat and drink in this condition. The plainer and more moderate the diet may be, and the less meat it contains, the more likely it is to suit. Further need not be said than that rich soups, highly spiced dishes, and salted meats and fish, should be avoided. The liver and bowels require rest, and this can only be

obtained by abstinence. As drink, hock, claret, or light burgundy will probably agree best. Mineral waters, as Hunyadi Janos or Carlsbad salts, should be used, not only to remove constipation but to maintain an action on the bowels. This may be assisted by a half-pint of hot water being sipped slowly twice or thrice a day. When symptoms of flatulent or atonic dyspepsia predominate, nitro-muriatic acid with capsicum may be advisable. Nitro-muriatic acid sponging, or the nitro-muriatic acid bath may also be employed. Exercise, either on foot or horseback, should be taken daily short of fatigue, and be regulated with special reference to the condition of the heart; for the right side of the heart—especially of a naturally weak heart—may be early affected as a consequence of portal engorgement, and at a later date this organ may also be subject to the fatty degeneration which often affects the liver as a sequel.

A further result attributable to chronic liver congestion is also *chronic diarrhœa*. This consists of a looseness occurring chiefly in the morning, or after taking food, or after unaccustomed exercise. The motions are rather dark and passed with some griping, and the person is soon rendered more or less anæmic. This diarrhœa is not persistent, but recurs at irregular intervals—sometimes at regular intervals. There is every reason to believe that this depends on portal congestion, although examination of the

liver does not always afford decided evidence of fulness; nevertheless, it will be desirable to use remedies calculated to relieve portal congestion. Janos water or Carlsbad salts may be given, with an occasional dose of compound rhubarb pill, with podophyllin extract and hyoscyamus, or cascara. It will also be desirable to administer quinine or arsenic, for the condition may be maintained by a so-termed malarious taint. Iodine paint may also be applied over the liver. The person must dress warmly, avoid cold, and the diet must consist of nutritious digestible food. Good burgundy is perhaps the best drink.

Although, as I believe, simple congestion of the liver may last a long time without producing any, or at least mischievous, change of structure, transudation may sooner or later result. Then the congestion may be followed by increased enlargement. This may be due to so-called hypertrophy, consisting in enlargement or multiplication of the secreting cells, an enlargement which probably takes place as an effort of nature to sufficiently desiccate the sluggish blood for it to flow more freely; or there may be hypertrophic cirrhosis, soon, probably, unless very acute, terminating in shrinking; or, with or without either of the above conditions, the liver may be enlarged by albuminoid or fatty deposits. It must not be forgotten that the liver may undergo atrophic degeneration and yet remain large from such deposits. The ques-

tion which of these forms of enlargement may occur depends very much on the constitution of the individual. Enlargement of the secreting cells will probably occur in the free liver or large eater without constitutional taint. A history of syphilis or spirit-drinking leads to the expectation of a cirrhotic condition. The presence of malarious cachexia or anæmia induces amyloid degeneration. A disposition, hereditary or otherwise, to the deposit of fat in other parts, especially with a history of luxurious living, induces expectation of fatty degeneration. Whatever other form of enlargement may take place, I believe in India fatty enlargement is usually present, the climate favouring such deposit (p. 6). When this occurs to any extent the liver descends below the ribs with rounded border and "doughy feel." There is often cough from pressure upwards by the enlarged liver, but as the secreting powers of the organ are to a great extent maintained, there is neither dropsy nor jaundice for an indefinite period. The treatment of a person with liver enlarged as a sequence of congestion depends much on the nature which the enlargement is presumed to be. When there is reason to believe the liver to be fatty, it is essential to avoid fatty and oleaginous diet, starch, sugar, and sugar-forming food, also sweet wines. Fresh lean animal food, game, fish, oysters, and green vegetables are advisable. As medicine, carbonate of ammonia may

be tried. Chloride of ammonium, iodide of potassium, and perchloride of mercury are mentioned as medicines serviceable in reducing livers enlarged in the, most frequently, complicated form which follows chronic congestion. Of these most benefit results from the careful use of the perchloride, especially if there is a syphilitic history. Red iodide of mercury applied externally is also desirable. But, in the absence of special taint, more benefit as a rule results from careful regulation of diet and exercise than from drugs.

The climate desirable for these cases is one which, while securing a cool atmosphere, is calculated to maintain free action of the skin; for the climate which tends to prevent such action cannot but exercise an injurious influence. On the other hand, a relaxing atmosphere is not advisable. Probably the higher parts of the Isle of Wight, the higher parts of Bath and Bournemouth, the western part of St Leonards, or Cheltenham will be best. Abroad, Ems, Baden-Baden, Mentone, San Remo, Cannes; or Carlsbad in the summer. It has been observed (p. 61) that patients should not go to an unsuitable climate for the sake of drinking waters. But in the class of cases under consideration some relaxation of this rule may be allowed. For instance, a person suffering as above may probably be despatched to drink the waters at Carlsbad, although, even from

the beginning of June till the end of September, Carlsbad may not afford the most suitable climate. During any other part of the year the risk of unsuitable climate would be too great.

The individual with *shrinking of the liver* is the next (tenth) type. It may follow enlargement of the liver from congestion, or occur after a history of perihepatitis, or of syphilis, or of spirit-drinking, or develop without any evident antecedent. It principally occurs amongst Anglo-Indians—to those who have been some time resident in this country. In the East cirrhosis among Europeans is exceptional, which, perhaps, may be accounted for by many succumbing to acute liver affection, to the climate and manner of life tending more to induce fatty degenerations, and to the prevalence of anæmia, which is mostly associated with amyloid enlargement. Dr L. S. Beale observes, "The cirrhosis of our text-books is said to be due to inflammation of the interlobular connective tissue, and formation of a new fibroid connective followed by cicatricial contraction." And Dr Beale endeavours to prove that this interstitial connective tissue "exists not" as a necessary supporting framework, for the tissue usually regarded as fibrous or fibroid connective or new material principally consists of the tissue of the lobules, and therefore is not strictly interlobular. However this may be, the effect is the same. There is lessened blood-supply and

pressure, producing shrinking and wasting, with deterioration or loss of function. Material which ought to be excreted accumulates in the blood, and at length the nutrition and action of various tissues and organs are deranged, including those of the arterial and nervous system. The symptoms of cirrhosis of the liver are not easily distinguished at first from those of ordinary dyspepsia or simple torpor. When, however, there is loss of appetite, flatulence, distress after meals, loss of flesh and strength, sallowness, despondency, headache, and slight discomfort on the right side or shoulder, commencing cirrhosis may be suspected; especially so if there is a previous history of perihepatitis, spirit-drinking, or syphilis. Later, perhaps, the suspicion may be verified by the irregular margin of the liver being felt beneath the ribs, while the area of hepatic dulness is diminished. The pressure of the contracted liver on blood-vessels in its structure soon causes sluggish movement in the veins coming from other abdominal organs, which results in further gastric congestion. This is evidenced by increased despondency, flatulence, acidity, morning nausea or sickness, attended by the evacuation of glairy mucus or a little bile, or of the acid fluid of water-brash. In some cases bloody mucus is presented. The skin becomes more dry, hard, and fawn-coloured, and there is probably increased uneasiness in the right hypochondrium, and epigastric tender-

ness. The stools are dark, offensive, and possibly contain blood. Hæmatemesis may occur. Melæna or hæmorrhoids may also be caused. Vertigo, epistaxis, convulsion, or apoplexy may result; the latter especially if there is an atheromatous condition of cerebral arteries, which are thereby rendered unable to bear the strain from impediment to free circulation of venous blood in the liver. Pains in the head or numbness of the extremities, connected with a small liver, are suggestive, especially if there is a family history of paralysis. In most cases the spleen is also engorged, while the veins of the abdomen become swollen from acting as compensating channels for the conveyance of the blood from the obstructed portal circulation into the general system. Sooner or later, ascites and œdema of the feet come on.

The treatment consists in putting a stop to the consumption of alcohol, and in giving mineral aperient waters or Carlsbad salts, mineral acids, and bitter tonics. The nitro-muriatic acid bath should be used, with regular exercise, and if possible horse exercise. Diet should be nourishing and digestible, and food should be taken in small quantities without condiments, such as mustard, pepper, &c. Little starch, sugar, or fat should be taken, which require bile for assimilation, and are liable to fermentation in an excess of mucus and an absence of bile. The habit, if existing, of eating one large meal should be interdicted. Elimi-

nation is very necessary, and if mineral waters or salts do not suffice, occasional doses of podophyllin or euonymus may be used. Chloride of ammonium has been recommended, but most good results from careful use of the liquor hydrargyri perchloridi. Iodine paint, or the unguentum hydrargyri rubri, may be applied over the liver. Treatment of ascites, if resulting, is the endeavour to procure absorption of the fluid by action on the skin, bowels, and kidneys. But the patient's general condition and strength and the state of the kidneys and bowels must be considered with reference to the use of purgatives and diuretics, which may do harm to an unhealthy organ. Operative procedure should be deferred as long as possible.

Another affection (eleventh type) which occasionally presents is *neuralgia of the liver*. The occurrence of hepatic neuralgia has been questioned, the symptoms having been attributed to pleuritic adhesions, pleurodynia, stone in the gall bladder, gout, dyspepsia, abdominal irritation, and various other conditions. But as there is no doubt that nervous filaments from the right phrenic, left pneumogastric, and sympathetic enter the liver with its vessels, so there is no doubt that hepatic neuralgia does occur. It is stated that if pain is neuralgic there should be no evident cause for it, and that it should be intermittent and independent of movement. The affection of the liver under consideration evidences these essentials.

But neuralgia of the liver is not attended with the acute pain characterising neuralgia in other parts. The symptoms are uneasiness, dull pain, or sense of weight in the right side. Also perhaps dull pain in the right shoulder, which feels tired, as if from long exertion. Sometimes occasional twitches in the side occur, especially in hysterical females, and the side may be said to be tender. But examination does not confirm this, or, in fact, detect anything wrong. Such symptoms are especially noticed after exertion, after exposure to cold, or after sitting long—as, for instance, on a railway journey. Lying on the right side often affords relief. The symptoms may be entirely absent for days, then returning without evident cause. Frequently they are so slight as to be forgotten when the person is occupied. But the mind often dwells upon it, and the person fears liver disease. Generally he is languid, desponding, more or less hypochondriacal or anæmic, and frequently suffering also from masked malarious fever, as described at p. 103. Such symptoms may at first be reasonably regarded with suspicion, as possibly indicative of insidious small liver abscess (p. 95), and there is no doubt that such symptoms may be so originated. But, appetite, digestion, sleep, general aspect, and excretions remaining natural, there being no rise of temperature, and flesh probably being gained, the nervous character of the affection becomes, at least to the patient, undoubted. But a

lingering suspicion as to the exact significance of the symptoms may yet remain in the mind of the physician, who is aware that a small liver abscess or its cyst may exist, as mentioned at p. 95; or that slight alterations of the structure of the liver may be present. If the individual has never suffered from hepatic congestion or inflammation, or from dysentery, if there is no reason to suspect cirrhosis, or if he has suffered from neuralgia in other parts, the great probability is that such symptoms are purely neuralgic. But besides being mistaken for symptoms of insidious abscess or its consequences, or for local alterations of liver structure, hepatic neuralgia may be attributed to pleurodynia, or to muscular rheumatism. But pleurodynia is common, hepatalgia is not; pleurodynia usually occurs in the left side, hepatalgia always on the right; pleurodynia is most common in females, hepatalgia in males; pleurodynia is often associated with hysterical symptoms, and is frequent about the "change of life;" hepatalgia usually occurs to persons who have been resident in the tropics. Muscular rheumatism is increased by motion, percussion, and walking, and is often associated with rheumatic pain in other parts, characteristics not common with hepatalgia. It must not, however, be ignored that the latter may co-exist with torpor, congestion, gout, pleurodynia, muscular rheumatism, and various other maladies. Medicine does little good, but tonics may

be given, and mustard leaves or iodine paint may be applied over the liver. Occupation of the mind and moderate exercise are the essentials.

The twelfth type of tropical invalid is the person returning with presumed or confirmed *abscess of the liver*. The history of the case will probably afford one or two attacks of acute hepatitis accompanied or followed by rigors, with subsequent intermittent shoulder pain, short dry cough, emaciation, diarrhœa, night fever, and perhaps enlargement. Or the history may be acute hepatitis, after which the patient remains weak and languid, symptoms as above gradually developing. Or there may be a history of dysentery followed by such symptoms. According to Budd and others, hepatic abscess may result from septic material conveyed by the portal circulation direct from a dysenteric ulcer. From statistics collected by myself when Assistant Surgeon to the European General Hospital of Bombay, it appears 18 per cent. of liver abscess are complicated with dysentery. But in practice it is found that those most liable to suffer from liver abscess during dysentery are individuals who have previously had some liver complaint. Neither should it be forgotten that liver inflammation and abscess and dysentery may be originated by the same causes. As regards abscess originating from general affection of the system, there is no satisfactory explanation of the manner in which emboli

pass the pulmonary capillaries to be lodged in the liver. Next, the symptoms mentioned above may have arisen after attacks of malarious fever, or without prior fever or any previous recognisable inflammation, congestion, or rigor. Sometimes diarrhœa, especially white diarrhœa, with accompanying loss of flesh, may be the only discernible results of a liver abscess. If the abscess is in the neighbourhood of the stomach, frequent and persistent vomiting may be the only prominent symptom. Or there may have been, and may still be, merely an undefined and gradual falling off of health, with loss of flesh and perhaps dry cough. A slight malaise and loss of appetite caused by a liver abscess may be attributed to dyspepsia. Cases have occurred where tumour was the first indication presenting. Occasionally symptoms present are so undefined that typhoid fever or tuberculosis have been diagnosed. Even when bulging has presented the case has been mistaken for pleuritic effusion. It should, however, be held in mind that the symptoms of an hepatic abscess are sometimes chiefly thoracic.

It is often necessary to judge altogether from general symptoms. *First*, there is the history of the case, as already referred to. *Secondly*, there are usually, but not always, some symptoms as follows:—Sallowness, but rarely jaundice; an anxious look; an anæmic condition; an irritable temper; a slow lethargic

manner; a capricious appetite; a dislike of fat; short dry cough; tongue red anteriorly and furred posteriorly; urine scanty, high coloured, depositing lithates, afterwards becoming more pale and abundant; occasional chilly feelings; temperature rising to 100° or more, but in an irregular manner (*i. e.* the temperature may rise to 101° or even 102° for a few days, and then become natural during the next few days; or there may be an irregular rise of temperature towards evening); extremities often cold; intermittent shoulder pain (most common when the right lobe is affected); abdomen full and more or less motionless; emaciation, cold perspirations, diarrhœa. Such symptoms, more or less marked, may persist for weeks, and liver affection may not be suspected. Weight in the right side, oppressed breathing, and occasional shooting pains in the side may also be complained of. Although shivering is sometimes premonitory, it does not always occur; and the throbbing which ordinarily accompanies the formation of pus in other parts is not often present in the liver. Usually the symptoms will be more or less clearly presented according to, *first*, the position, and *secondly*, the size of the abscess. A superficial abscess is always most painful, but there may be extensive suppuration in the liver without pain. If the abscess is small and posterior the stomach is not affected, neither may pain be felt in the side. In some cases the bowel about the cæcum is tender. A painful

spot about the spinous process of the fourth dorsal vertebra has been sometimes noticed in connection with a deep-seated abscess. Tension of the right rectus muscle is not a symptom of much value, although sometimes accompanying abscess situated anteriorly. Shoulder pain, as in hepatitis, may or may not occur; if presenting it is usually intermittent. The biliary secretion is often normal, but diarrhœa, and particularly white diarrhœa, is to be looked upon with suspicion, especially when presenting in connection with other symptoms. Decubitus varies with the position of the abscess. Pointing is most characteristic of small acute superficial abscess, and if it presents below the costal cartilages, near the epigastrium, it is most satisfactory, as the abscess is probably in the left lobe and small. Occasionally it may present to the left of the epigastrium. A deep-seated large abscess does not usually excite pressure on one spot. It extends in all directions, destroying the texture of the liver until perhaps limited by the formation of a surrounding membrane. If it reaches the surface it often does so by uniform and diffused swelling, either below the ribs near the epigastrium, or with bulging of the intercostal spaces. Sometimes a deep-seated abscess, which has not afforded diagnostic evidence, in coming to the surface excites pain and other symptoms which may be mistaken for hepatitis or pleurisy. Fulness and hardness about the epigastrium indicate disease

of the left lobe; while cough, impaired movement of the right side, shortness of breath, increased measurement or increased dulness, are characteristic of an affected right lobe. When a person lies on the left side, right side dulness may disappear to some extent, which probably indicates that the pleura is not implicated, and that adhesions have not formed. But often sneezing, coughing, deep inspiration, and pressure cause no pain. In several instances, however, coughing caused pain when nothing else did. Pain or uneasiness is more likely to be experienced from smart percussion, especially posteriorly. Frequently in the first stage of abscess, or sometimes during any part of the progress of abscess, little or no information is obtainable by examination. A friction sound, an "hepatic compression bronchus" in the lower part of the lung, and an emphysematous crackling have all been heard in connection with liver abscess, and anasarca has occurred from pressure on the vena cava, but none of these signs are of constant occurrence, depending as they do on the position and progress of the malady. Impaired movement of the right side, bulging, and dulness may be similarly spoken of. There are no symptoms short of discovery of actual pus which establish the presence of abscess with absolute certainty. As previously observed, a gradual and undefined falling off of health and loss of flesh may be the only indications of a liver abscess. In all

cases of obscure ill-health in persons returned from the eastern tropics, hepatic abscess should be suspected, even if the patient has been in Europe for years. And this especially if the patient has been in certain parts of the tropics, as Bombay and the coast districts generally, where climatic conditions are more favorable to such affection than the drier climate of Northern India. In a hot dry temperature, where perspiration is rapidly evaporated, there is less tendency to visceral engorgement than where the individual lives in a hot moist atmosphere, subject, however, to diurnal changes of temperature from the land and sea breezes, which chill the debilitated skin (p. 9). It is a prevalent idea that continuous high temperature may entail congestion of the liver with resulting abscess, but there is more liver abscess in Bombay during the cold season than during the hot weather. Heat is the predisposing cause (p. 4), comparative cold the exciting cause.

In cases of suspected abscess careful examination of both the region of the liver and of the chest from time to time, and consideration of the results with the patient's history and present condition, not neglecting the use of the thermometer, are essential. A slight but irregular daily rise of temperature justifies suspicion in a returned Anglo-Indian, as well as the irregular rise previously referred to (p. 91).

A person may carry a small abscess in the liver

for years, one or more of the following being the only manifestations:—Masked fever (p. 103), hepatalgia (p. 86), slight dyspepsia, occasional nausea, inability to eat fat, uneasiness in the right hypochondrium, sometimes a recurring or even a fixed pain in one spot, and perhaps occasional rigors, when the abscess apparently takes on a temporarily active condition, and may probably be increased in size. Or a small abscess may become encysted and remain latent for an indefinite period without affording any indications of its presence. There is also strong presumption that a liver-abscess is occasionally absorbed, as sometimes a white fibrous sac only has been found, in persons who have suffered from unequivocal symptoms of abscess, and afterward succumbed from some other malady. Dead hydatids, and syphilitic growths, may have been mistaken for remains of abscess. But the fact that abscess does sometimes disappear is as unquestionable as the facts that a psoas abscess or an empyema may occasionally disappear by absorption.

Dr Vaughan Harley observes that suppurations of the hepatic tissue are most frequently met with in strumous subjects, and the most unsatisfactory cases of all to treat are those in whom a syphilitic taint is superadded to a constitutional struma; and with this I fully agree.

I mention here that I have known shivering, pain

in the liver, and other symptoms of abscess simulated in an hysterical woman, a fact which may be held in mind when dealing with the hysterical diathesis.

When an abscess is acute and points, or when the abscess is chronic and bulging, or even fulness has occurred, with the general symptoms previously mentioned, there can be little doubt as to the nature of the malady, particularly if the person has returned from the eastern tropics, and especially from the coast districts of the eastern tropics. But the difficulty of diagnosis of hepatic abscess is sometimes so great, and the danger of allowing an abscess to go on destroying the texture of the liver and eventually opening internally or killing the patient by blood-poisoning, hectic, or exhaustion is so prominent, that exploration in search of abscess has long been advocated. Observing that Indian *hakeems* resorted to puncture of the liver and spleen for the dispersion of indurations and enlargements, and seeing that persons have recovered from accidental puncture of the liver, Europeans in India many years ago adopted the practice, and Murray and others repeatedly plunged trocars deep into enlarged livers, which "never had the slightest ill effect." Instances of cure have, indeed, been recorded as due to the puncture, not only by the older authors, but quite recently, and Dr George Harley advocates hepatic phlebotomy for hepatitis. In two instances I have known symptoms

indicating abscess subside after puncture of the liver, although pus was not found, and no blood was drawn. How the puncture acts when no blood flows is not clear, but the fact of subsidence of symptoms after such puncture has been noticed too frequently for it to be regarded as a mere coincidence, although it must not be forgotten that similar symptoms have subsided without interference. Still, certain practitioners advised non-interference. It was argued that the solid substance of the liver does not readily contract after pus is suddenly evacuated. That nature opens the abscess gradually by small apertures with far less shock to the system. That as pus gradually oozes away the liver contracts upon the cavity, and therefore air is less likely to be admitted. That an abscess may be multiple, especially when following dysentery. That under the expectant treatment pus may be discharged by the lungs or bowels, with better results than when a direct opening is made. That it does not follow, if an abscess is opened externally, it will not also open internally. That any operation on the liver is not free from the danger of hæmorrhage, especially if the patient is scorbutic, or has tendency to bleeding from slight causes. That the presence of adhesions cannot be safely assumed. That bile is more likely to find its way into the abscess. That secondary hæmorrhage is more likely to occur. That, as before mentioned, unquestionable symptoms of liver

abscess have sometimes disappeared spontaneously. Any kind of active interference, therefore, fell more or less into disrepute, and was not practised when I first went to India. More recently it has been revived in the practice of experts such as Palmer and McLeod of Calcutta, Blanc and Pinkerton of Bombay, Sir J. Fayrer, Dr Maclean, Dr G. Harley, and others. But recourse to active interference should not be hurried. When a person with presumed abscess arrives in Europe, unless urgent or unmistakable symptoms present, it will be prudent to proceed very cautiously. Notwithstanding that symptoms of liver-abscess have undoubtedly subsided after puncture, the procedure can scarcely be recognised as a legitimate curative operation, especially as tumour of the liver, presumed to be abscess, has subsided in similar manner without any treatment at all. Again, it has already been stated that a person may carry a small abscess or the remains of an abscess for years, and sometimes be not much the worse for it; and there is always a chance that a small abscess may become quiescent. In obscure cases, when symptoms are not urgent, and when there is a history of syphilitic taint, it will be advisable first to use anti-syphilitic medicines. In more urgent cases without clear evidence of suppuration, the liver should be explored. When, either by exploration or otherwise, pus is detected, it should be evacuated as soon as possible. So far back

as 1629 Bontius wrote : "The only chance of recovery is opening the imposthume," and we have not excelled much on old Bontius' plan. As Dr G. Harley states, when abscess is detected, the sole object is to empty it of its contents, and so endeavour to avoid the risk of the abscess spreading and destroying more of the texture of the liver, proving fatal by hectic or exhaustion, or eventually opening internally in one of the different manners in which it may so open—most usually into the lung, duodenum, or colon; and here it may be observed that pus traversing the intestines is considerably altered in appearance, becoming more white and flocculent. There is also the fact in favour of operation that the relief of pain and fever is often marked, even when operation is not eventually successful.

A description of the necessary operative procedure is not within the proposed scope of these observations. Most cases require modifications, and most surgeons adopt modifications, which have been described, especially by Sir J. Fayrer, Dr George Harley, in admirable papers by Surgeon-Major Tomes ('Lancet,' October 16th, 1886), Surgeon-Major Younge ('Hepatitis and Hepatic Abscess,'), by Dr Vaughan Harley ('Brit. Med. Journ.,' November 23rd, 1889), Mr Godlee ('Brit. Med. Journ.,' January, 1890), Surgeon-General Marsden ('Lancet,' January, 1890), and in my 'Manual of the Diseases of India,' 2nd ed. Whether or not

the liver should be explored from a valvular opening? If a grooved needle or a long trocar should be used? Whether or not the aspirator should be used for exploration? In what position the exploration should be made? Whether a purgative should be first given to clear the colon? Whether repeated aspirations should be tried or not? Whether or not the whole of the pus should be drawn off? Whether operation should be delayed if there is no certainty of adhesions, the tumour moving with the position of the patient? Whether, "if either pleura or peritoneum be opened, the opening must be closed with a double row of stitches before incising the liver," as recommended by Mr. Godlee? Whether a trocar and cannula, the bistoury alone, expanded forceps, or the instrument devised by Mr Godlee for introducing the latter, should be used? Whether hæmorrhage, if occurring, should be arrested or not? Whether a drainage-tube should be inserted, or the cannula left in, or merely a pledget of lint? Whether antiseptic precautions should be adopted? Whether a counter-opening is desirable or not? Whether or not the cavity should be washed out with antiseptic solution? If the operation should be performed under an anæsthetic? When the drainage-tube, if used, should be taken away? Whether if an abscess has opened internally, it should still be opened externally? Whether in cases where hope of cure cannot be entertained,

partial emptying the abscess will be advisable? All these, and some others, are questions which can only be satisfactorily answered when applied to individual cases.

But notwithstanding all that may be advanced in favour of any method of treating hepatic abscess, success in the majority of instances depends most on the position and size of the abscess and the strength of the patient. If the abscess is small, and the person fairly strong, the chances of success under any treatment are increased, and evacuation by artificial means will be more likely to expedite a favorable result. If the reverse conditions obtain, the chances of success are much diminished. It is not well, however, to despair, Extraordinary recoveries after extensive abscess are on record. Dr Vaughan Harley reports a case of recovery after operation, toxic effects on the brain from blood-poisoning being previously well marked. It should, however, be noted that if a person suffering from hepatic abscess has also dysentery, the chances of recovery are much reduced.

The question whether a person who has recovered from hepatic abscess should return to the East may arise. If possible, he certainly should not do so. On the other hand, I have known several persons who have returned after recovering from abscess; also others who have recovered from abscess in India, and who have remained well for years. But it should be re-

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collected that one liver-abscess confers no immunity from a future attack. In fact, I believe, it predisposes to future attacks, for I am acquainted with several persons, who, as they designate it, have "burst" more than one hepatic abscess.

A thirteenth type is the person returning with *ague*, which he cannot shake off. It recurs either at regular or irregular intervals, and an attack is likely to follow slight exposure to cold and wet, or slight imprudence in diet. Sometimes there is no decided cold stage, but the individual becomes feverish, and ultimately perspires. The spleen may or may not be larger than natural. The first thing is to ascertain if there is any scorbutic taint. If so, antiscorbutics should be used. Moreover, they should be given, even if there is no recognisable scorbutic taint, if the person has been in one of the numerous localities in the tropics where fresh vege ables are scarce (p. 12). The next thing to ascertain is the absence of specific taint. If this exists iodide of potassium will probably be necessary. Additional treatment should depend upon whether the person has, or has not, taken much quinine. It will probably be found that such a patient has taken a great deal of quinine without much benefit. The system may be impregnated with this agent, which, although so often necessary to treat fevers, is nevertheless capable of exciting a febrile condition. It

will be desirable to act on the bowels, and so relieve any abdominal congestion which may be present by Carlsbad salts. If the person has not taken much quinine, this may be given in combination with lemon-juice. If quinine does not suit, salicin or arsenic probably will. If the patient has taken much quinine, or at first if there is any scorbutic taint, vegetable acids should be given to a large extent. The juice of several lemons may be taken daily. The importance of the use of organic acids for promoting the elimination from the system of urates or other products of excessive or perverted tissue change, has been scientifically insisted on by Dr Knott, of Dublin, and lemon-juice has been empirically recognised and recommended as a preventive and cure of malarious fever by Klebs. The taste which fever patients display for organic acids may perhaps be regarded as a conservative provision of nature supporting the above treatment. Whatever provision is adopted, great caution as regards exposure and dietary imprudence is necessary. Climates suitable are those mentioned under the fifth type (p. 69).

A fourteenth type of tropical invalid is seen who brings home a condition elsewhere described* as *masked malarious fever*. It should, however, be regarded as a feverish condition caused by heat, or a minor degree of thermal fever, of which there is much,

* Author's 'Manual of the Diseases of India,' 2nd ed.

both severe and mild, in the tropics, although the distinction is not yet admitted into the nomenclature. It consists of very slight febrile excitement, which may be continued, intermittent, or remittent. The person has no decided fever, but complains chiefly of heat, dryness, and burning in the palms of the hands, and less frequently in the soles of the feet. He may be annoyed by periodic beating or singing in the ears. The forehead and eyes also sometimes burn, and exceptionally a dusky spot before the eyes, increasing into a zig-zag halo of light and then disappearing, is mentioned. The burning of the palms, &c., may be persistent, with slight remissions when the parts become a little moist, or there may be distinct intermissions. The skin, excepting of the burning parts, does not feel warm to the touch, but the thermometer may evidence a very slight rise of temperature. The appetite probably remains good, but sleep is restless. Lastly, the person may be more or less anæmic, but often no sign of anæmia is shown. The treatment mentioned under the last type is applicable.

A fifteenth type of invalid is the person long resident in tropical climates who suffers from *constipation* depending on torpor of the large intestines. As a rule, it is simply consequent on the intestines sympathising with the general want of tone caused by continued heat. But sometimes old contractions from healed dysenteric ulcers add to the mischief by

mechanically impeding onward movement of fæces, and causing increased putrefaction, the gas from which may be absorbed. Torpor of the large intestines occasions furred tongue, fœtid breath, and sallow complexion. There are often colicky pains, flatulent distension, irritable bladder, or in females ovarian irritation. Perhaps the region of the cæcum may be found full, or even tender. Persons with torpid intestines often say their bowels are open because they visit the closet daily, whereas in reality they are constipated, as they only void fæcal lumps. But occasionally a copious purging may occur, the stools resembling muddy water with fæcal lumps floating or settling in the fluid. Sometimes there is only straining and watery discharge. The condition may be complicated with hæmorrhoids. Powerful medicines are not advisable. Occasional doses of Hunyadi Janos water or of fresh castor oil are suitable; sometimes one, sometimes the other, acting best. Exceptionally a dose of podophyllin, or of euonymus, or of one of the preparations of cascara with nux vomica extract, may prove useful. A grain of ipecacuanha early in the morning is advisable; when there is much flatulence, vegetable charcoal biscuits. But the large intestines are so far removed from the stomach that often more benefit results from other measures; careful rubbing and kneading the bowels will sometimes promote healthy action. Periodical warm soap-and-

water injections are desirable. Dilatation of the sphincter ani by the use of large glycerine suppositories may be used. Removal of fæcal matter having been accomplished, reaccumulation should be prevented. Tonics and mild aperients are indicated. Small doses of Janos water is a good habitual laxative. Glacial extract of aloes and hyoscyamus with quinine and sulphate of iron may be prescribed. Aloes is very useful for fæcal sluggishness, especially in elderly people, and may be taken frequently in proper doses, when neither piles nor uterine affection exist. The thing is to find out the quantity which will produce a daily motion. If aloes is not suitable, extract of nux vomica, with extract of colocynth and Castile soap. Liquor podophyllin et belladonna c. strychnia (Hockin) is a good medicine in these cases; as adjuvants, a grain of ipecacuanha and a grain of extract of belladonna early in the morning. The occasional use of the glycerine suppository previously mentioned is also desirable. Care in diet and attention to the teeth are necessary.

The sixteenth type of tropical invalid is the person with *chronic diarrhœa or dysentery*. This may originate in the tropics, as a sequel of acute malady. Or it may commence in the tropics in a chronic form from the first. Or it (especially diarrhœa) may occur to persons returned from the tropics who have not suffered from bowel complaint previously. This happens

especially to the returned Anglo-Indian after some exposure to cold, or after unaccustomed fatigue. There may be a purely chronic diarrrhœa, or there may be a purely chronic dysentery, or there may be a chronic dysenteric diarrhœa, the stools being bloody one day and all fæcal another, or at least apparently so, the small amount of blood or slime secreted and passed from any unhealed ulcer not being discernible in the evacuations. In both chronic diarrhœa and dysentery, defective nutrition results from interference with assimilation and absorption, and the flux increases as a consequence of the growing debility, cause aggravating effect, and effect aggravating cause. But in chronic dysentery—which implies unhealed ulceration in the bowels—there is more pain, and also passage of mucus with a little blood. This loss, although small, adds to the debility, so that material exuded is incapable of healing the ulcer. There are, however, certain complications which may add to the debility in any form of chronic bowel complaint. It may be associated with hæmorrhoids, and if they bleed there is an additional and direct potent cause of debility. Blood following stools indicates bleeding piles. Hæmorrhoids may also be ulcerated. When this condition presents with diarrhœa, the questions arise: if the case is diarrhœa *plus* ulcerated piles? or if dysentery exists? If the history is one of diarrhœa, if there is no local abdominal tenderness,

and if on examination ulcerated piles are found the case will be clear. When the history is of dysentery and there are ulcerated piles, it is difficult to determine how much of the symptoms presenting should be attributed to the one or the other condition. The mixture of mucus or sanguineous discharge with fæces points to rectal dysentery, but also in a lesser degree to ulcerated piles and diarrhœa. If the history is one of dysentery, if there be local abdominal tenderness, and if ulcerated piles are not discovered, the diagnosis will be evident. It must not, however, be forgotten that chronic dysentery may exist with ulcerated piles. If there are sore piles in combination with either chronic dysentery or diarrhœa, there is an additional agent of debility. Lastly, chronic bowel complaint so frequently causes, or is associated with, profuse leucorrhœal discharge, that in females there is often a further debilitating agency.

Chronic dysentery may exist with diarrhœa or it may be present alone. In chronic dysentery there are slimy and bloody stools passed with straining. Such stools may alternate with apparently purely diarrhœal motions, as before mentioned, or they may alternate with constipation. When there is ulceration of the upper part of the bowel, soreness and pain are often felt at some particular part of the abdomen, sometimes so defined that the finger can be placed on the spot, and hardening and thickening may perhaps

be discovered. Or the disease may be confined to the rectum.

Chronic tropical diarrhœa (not depending on portal congestion, p. 79) is a more or less painless diarrhœa of light, grey, sometimes almost white, frothy, offensive, and fatty stool. At first this chiefly occurs in the morning. Although the diarrhœa is generally painless, the person is much troubled with "rumbling" in the bowels, and flatus which may have a rotten-egg flavour. Although little or no bile is present in the motions, it is still not found in urine. The skin, although often bronzed or even sallow, is not jaundiced. But it is dry and harsh, and loose from the absorption of fat. In severe cases the tongue is red and glazed, and there may be aphthous spots in the mouth. There is increasing emaciation and languor. The malady is in fact chronic *diarrhœa alba*, and the sequelæ may be albuminuria, dysentery, exhaustion. After death, the intestines have been found attenuated, the mucous coat and glands, also the mesenteric glands being degenerated and atrophied with lardaceous or fatty deposits. The liver and spleen have been found smaller than natural, usually without alteration of structure, but sometimes with similar deposits. The condition assimilates to that described by Dr D. Cuningham as occurring in the intestines of famine-stricken people. It is most probable that these appearances are consequent on the disease, and are not the original cause of the disease.

As in the famine-stricken, they result from want of nutrition, which want of nutrition is caused by diarrhœa in the one case, and by famine in the other. A very few days of profuse diarrhœa, with its attendant loss of appetite and drain on the system, is equivalent to famine. The explanation of *acute* diarrhœa alba would appear to be torpor of the secreting cells of the liver, probably the result of chill; and I regard it as a further manifestation of torpor of the liver as described at p. 73. It is in accordance with physiology to presume that nervous influence is lessened by cold. Why the liver should be so often affected is probably explainable by the irritable condition of the organ in Indian climates. The liver is not, however, always affected. A similar condition may result in other parts from cold, when after exposure a bladder becomes powerless to act, or a limb becomes numbed and powerless—states formerly attributed to moon-stroke. The fact that diarrhœa may occur from both excess and deficiency of bile is not paradoxical. Anything irritating the intestines may cause diarrhœa. There are, as the effects of the absence of bile, imperfect digestion, non-neutralisation of irritating acids, and the loss of the antiseptic property of the bile. Recently, M. Robin stated that *acholia* is characterised by the elimination of incompletely oxidised sulphur in the urine. But in diarrhœa alba there is no alteration in the urine, until in the later stages albumen may

present. There is, however, much eructation of rotten-egg favour, evidently due to gas formed in the intestines. Jaundice and head-symptoms not occurring leads also to the conclusion that no bile is formed. The blood becomes depraved, but the poisonous matter of the bile must be absent, when none is manufactured. It has been argued that bile may pass, *minus* colouring matter, and it has been stated that fæcal matter may become pale if retained long, owing to the absorption of the colouring matter. The latter cause of white stool is not applicable to diarrhœa alba, and until it can be shown that bile is elaborated, minus colouring matter, in this complaint—and this has not been demonstrated—I regard the malady as hepatic in the first instance, and due to atmospheric changes or chill; for diarrhœa alba or torpor of the liver (p. 73) sometimes presents within a few hours of a person passing from the heated Indian plains into the comparatively cold air of the Indian mountains.

The treatment of this form of chronic diarrhœa, or of chronic dysentery, or of chronic dysenteric diarrhœa, should be conducted on the same general principles. The cardinal points to be attended to are rest, protection from chill, and proper diet, all of which are of more importance than medicine. Rest is as necessary for the treatment of chronic diarrhœa or dysentery, as for the cure of acute, and often this rest is not taken by the invalid, who, returning from

probably a prolonged sojourn in the tropics, is anxious to see friends and to partake of amusements. Protection from cold and chill is of the greatest imporance. Woollen clothing and an abdominal belt should be used. East winds should be avoided, but as much outside fresh air as possible should be secured. All low, damp, swampy localities should be avoided; and notwithstanding that it has recently been stated by high authority that summer diarrhœa prevails most on porous soils, still, for the sufferer from bowel complaint contracted in the tropics a gravel soil will be best. As regards diet, the requirements are food rich in material for the constitution of the blood, which may be easily assimilated, and good cooking. There is a natural disposition in mankind to rush to extremes, and so an exclusively animal diet has been recommended. But *in medio tutissimus ibis* is a generally safe maxim; and unless in very severe cases I prefer that adults should have what they have been accustomed to, which is usually a mixed diet. But of course irritating indigestible food must be prohibited. Beef tea, beef extract, Brand's essence, chicken veal or mutton broth, raw meat soup, jellies, rice-water, flour and milk, panada, sago, sometimes farinaceous puddings, and occasionally, as convalescence advances, very fine mince, afford a wide choice. For fear of irritating the bowels, fruit and vegetables are sometimes entirely excluded. But such a course, if the

patient is not already scorbutic, may tend to make him so. Therefore it may not be well to interdict cooked vegetables entirely; but raw vegetables should not be allowed. Fruits may also be taken in moderation, provided they do not contain seeds. The motions should be frequently investigated, and any food not properly digested should be avoided, also if any food causes flatulence or uneasiness or aggravation of symptoms, it should be avoided. There is often a morbid craving for food, which induces patients to eat improper things, and to conceal having done so. And there is sometimes a voracious appetite, which causes patients to eat too much. It cannot be too strongly impressed on the patient that neglect regarding diet or exposure will negative medical treatment. Patients often say nature is a good guide, and so indulge their appetites. Nature is certainly not a good guide in chronic bowel complaint. The patient must "appease the hungry edge of appetite by the bare imagination of a feast," for he is not the person who may compound for sins by condemning others. He must never forget that the bowels require rest. He must also cultivate the *mens sana,* and beware of giving way to mental emotions (p. 39). If stimulants are required, whisky, good claret, or port wine are best. The next thing to do is to attempt to restore the functions of the liver and skin. These essentials will be promoted by care as regards clothing, by warm

salt-water baths, and by small doses of Dover's powder night and morning. A compress over the bowels wet with nitro-muriatic acid solution often appears beneficial. *Liquor hydrargyri perchloridi* may also be tried cautiously and in small doses. It is both cholagogue and antiseptic. In the acute malady it frequently acts beneficially in ten minim doses every four hours, apparently influencing the liver and certainly restoring some colour to the stools. If, as occasionally happens in chronic bowel complaint, constipation alternates, this should be met by fresh castor oil or by Janos water, which suits some best. Liquor arsenitis potassæ after meals is sometimes useful in anæmic chronic diarrhœa. Acetate of lead, sulphate of copper, and nitrate of silver, are sometimes employed. But if towards convalescence astringents are thought desirable, more benefit results from a mixture composed of compound tinct. of benzoin, compound tinct. of catechu, tincture of opium, and extract of logwood. For anæmic persons with chronic diarrhœa solution of pernitrate of iron may be beneficial, or a mixture containing potassio-tartrate of iron with tincture of opium. The liquid extract of bael may be used advantageously in almost any case, more especially if there is occasional constipation. Bael possesses astringent, slightly sedative, and very slight aperient properties, an union not found elsewhere. And although a decoction of the fresh fruit is best, the liquid extract

may be used, fresh fruit not being attainable. Holding in recollection that there may be in chronic diarrhœa a deposit of fatty matter in the structure of the bowels, it will be well to combine with other measures the use of the syrup of iodide of iron, which may be taken in drachm doses.

The anterior condition must be studied. The possibility of a scurvy taint should never be ignored. There is no doubt that a scurvy taint may exist—like the syphilitic taint may exist—in a latent condition, long before its presence is demonstrated by spongy gums or subcutaneous extravasations (p. 12), and the manifestation of its presence may actually be diarrhœa. If the patient has been in a locality where fresh vegetables were scarce, or if he has fallen into the Anglo-Indian habit of eating vegetables scantily, he should have antiscorbutics, even although there are no visible indications of scurvy.

The bowel complaint may, however, be apparently connected with so-called malarious cachexia. Or the bowel complaint may even alternate with fever—that is, there may be a feverish condition for a few days and cessation of bowel complaint, and then bowel disturbance without a febrile state. In such a condition Dover's powder and quinine night and morning will usually prove beneficial. Or, if the quinine does not suit, salicin and ipecacuanha thrice daily.

Massage of the bowels may be useful for diarrhœa,

if performed carefully, and without undue force. Dr Symons Eccles has proved that massage promotes intestinal absorption, and records two cases of chronic tropical diarrhœa successfully treated by this means. Massage may be performed for fifteen minutes once or twice a day, and Dr Eccles judges of the improvement by the rapidity with which salol may be detected in the urine ('Practitioner,' Oct., 1889).

If any thickening is discovered, or pain in one spot is complained of, iodine paint should be used. When ulceration appears confined to the rectum, local medication with nitrate of silver, alum, &c., has been advised, but the necessary manipulation often does more harm than good. If hæmorrhoids exist they must if possible be prevented causing bleeding, and should be specially treated with reference to the condition and strength of the patient. For the complication of leucorrhœa in females weak alum or green tea infusion may be used as injections.

Should this hygienic and medical treatment not prove satisfactory, or from the first in severe cases, the patient may be placed on a milk diet. It must, however, be recollected that although milk contains all the elements of nutrition, it is not always assimilated well by diseased persons, and some persons cannot take it. Then the milk may not be good from many causes, and it is best, if possible, that it should come from one healthy animal. It may be taken in

too large quantities at once, the result being the precipitation by the gastric juice of masses of casein which are not digested, and which irritate the bowels; for, although a fluid out of the body, milk becomes a solid food in the stomach or intestines. Then there is the question whether it should be taken warm or cold, tepid milk usually agreeing best, also whether it should be boiled or not, which is usually advisable. Milk by boiling loses the animal smell and the taste of fresh milk, which to some persons is not pleasant. Boiling also tends to destroy injurious matters which may be present in the milk. Again, milk may not agree if given alone, and may do so if mixed with one third lime water, or with Vichy or Apollinaris water, or if peptonised. Sometimes condensed Swiss milk agrees best. If a milk diet is adopted not more than three or four ounces should be taken at one time. Sometimes it may be necessary to limit the quantity to a table-spoonful—but the milk should be repeated at intervals the more frequent in proportion with the smallness of the quantity. In this manner three quarts or even more may be consumed in the twenty-four hours. To satisfy the patient, a little good bread or sago may also be occasionally given, and, exceptionally, a little broth or raw beef tea. But the less of anything besides milk which is taken the more likely is the treatment to be successful. If all these things are attended to a milk diet will probably prove

very beneficial after the first few days. At first the patient may probably complain of not being able to take or to digest the milk, of the sameness of the diet, or even of feeling weaker. But, as a rule, if he perseveres he will gradually gain strength and freedom from flux.

The "grape cure" has also been advocated. Of this I have limited experience of two cases not benefited. Those who would reap the advantage are advised to forego luxury, to sleep in the peasant's cot, and to sit upon his bench, avoiding anything in the shape of comfort! This is scarcely the regimen in the Tyrol or the Alps for a person with chronic bowel complaint. The "grape cure" answers best in the diarrhœa of hæmorrhoidal patients, alternating with constipation; for the action of pulp of grapes is decidedly laxative.

Change is a remedy which cannot be ignored. But this requires much consideration. Persons going away from home cannot always secure that attention and care and cooking which their condition demands (p. 62). The climatic object to keep in view is equable temperature, so that while there may be free action of the skin, exposure to sudden chills may be avoided. The Isle of Wight, Ilfracombe, Hastings, the higher sites of Bournemouth, Torquay, the Channel Islands, Dawlish, on the coasts; inland, Cheltenham and Bath; abroad, Pau, Baden-Baden,

Mentone, perhaps offer the best climates. For bowel complaints no mineral waters are advisable, except perhaps in lingering cases, when very slight occasional looseness remains, those containing alum, as found at Aix-les-Bains, a locality where the climate is also suitable.

When a patient with chronic bowel complaint recovers, the question of return to a tropical climate often presents. When a person has embarked on a tropical career, his future prosperity and advancement may depend on his ability to return by a certain period. But, speaking medically, consent should not be given until at least twelve months have elapsed, since all signs of diarrhœa or dysentery disappeared, and not even then if the person is still anæmic, if of the nervous temperament (p. 49), or if disposed to action of the bowels by idiosyncrasy (p. 39). Much also must depend on the occupation of the patient, and more on the locality to which he is going, with reference to local seasons and conditions. Every case, therefore, will require special consideration.

Another phase (seventeenth) is the person returning suffering from the *after-effects of sunstroke*. So-called sunstroke may chiefly influence the brain, or it may principally affect the spinal cord, or both may be affected. The after-symptoms vary to a considerable extent, as one or other of the organs named are most implicated. The earlier symptoms of the after-

effects of sunstroke are so similar to those of nervous exhaustion (pp. 63, 64) where diagnostic features are indicated, that repetition is unnecessary. In addition it may be observed that sunstroke is frequently followed by periodical or persistent headache or neuralgia as a prominent feature. Paralysis may also occur as a sequel, and the case may terminate with softening of the brain. These sequelæ may be attributed to the injury the brain or spinal cord suffers during the primary attack. Probably there is loss of nutrition if the attack takes the form of heat-syncope and congestion and extravasation when the attack is one of heat apoplexy. By both conditions the organs may be weakened for life. I believe iodide of potassium is the most generally useful remedy, especially if the patient has ever suffered from venereal. But, manifestly, the treatment merges into that for the form of sequel which may present.

An eighteenth type of invalid is the person returning with *hæmorrhoids* which have appeared in the tropics. More frequently than not the person is anæmic. Often he desires to get rid of his trouble by immediate operation; but this should be delayed. It not unfrequently happens that hæmorrhoids developed in a hot climate disappear under the influence of change of climate, and improvement of the general health by tonics. Before having recourse to operation, dilatation of the *sphincter ani* may be tried, and this may

be accomplished by the use of large glycerine suppositories.

A nineteenth type of tropical invalid is the sufferer from a *gouty condition*. This probably depends on, or is complicated with, defective action of the liver (p. 31), and there may also be an underlying scorbutic taint. While remedies such as salts of lithia and potash, generally considered beneficial in gout, may be prescribed, and careful diet and hygiene insisted upon, more benefit will probably result from a visit to Bath or Carlsbad, or if this cannot be accomplished a course of Carlsbad salts at home. The possibility of a scurvy taint should lead to a due proportion of antiscorbutics in the diet.

The twentieth and last type of the tropical invalid is the female who, as the result of heat, relaxing climate, so-called malaria, nursing, or other debilitating causes, suffers from *weakness, congestion, or other affection of special internal organs*. The condition is usually characterised by pains in the back, pallor or sallowness, indigestion, hepatalgia, pleurodynia, neuralgia, depression of spirits, nervousness, watery or bloody leucorrhœal discharge, profuse or irregular menstruation, sometimes hysteria, and perhaps diarrhœa. Acute pain referred to the liver may also be present in the anæmic hysterical female (pp. 87, 95). If there is no uterine affection, such as ulceration, or displacement, rest, tonics, good diet, care

against chill, and a moderately bracing climate, as mentioned under the third type (p. 66), will generally effect a cure.

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